

CP3-3807

5340 86735

**SEARCH REQUEST FORM** Scientific and Technical Information Center - EIC2800  
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Date 2/13/03 Serial # 09/485,227 Priority Application Date 12/7/98  
 Your Name M. Lewis Examiner # \_\_\_\_\_  
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 In what format would you like your results? Paper is the default. PAPER ☐ DISK ☐ EMAIL ☐

If submitting more than one search, please prioritize in order of need.

The EIC searcher normally will contact you before beginning a prior art search. If you would like to sit with a searcher for an interactive search, please notify one of the searchers.

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 Circle: USPT DWPI EPO Abs JPO Abs IBM TDB

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What relevant art have you found so far? Please attach pertinent citations or Information Disclosure Statements. \_\_\_\_\_

What types of references would you like? Please checkmark:

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What is the topic, such as the **novelty**, motivation, utility, or other specific facets defining the desired **focus** of this search? Please include the concepts, synonyms, keywords, acronyms, registry numbers, definitions, structures, strategies, and anything else that helps to describe the topic. Please attach a copy of the abstract and pertinent claims.

Claims 19-25 (Claims 19, 24 + 25 are independent)

Problem: See Page 2 1<sup>st</sup> Paragraph

" " 3

" " 4 last "

" " 5 " "

" " 6 line 2

Solution: Abstract + see claims

Please try to find the compounds and -

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Searcher: Derrick Black  
 Searcher Phone: \_\_\_\_\_  
 Searcher Location: STIC-EIC2800, CP4-9C18  
 Date Searcher Picked Up: 1/14/03  
 Date Completed: 1/14/03  
 Searcher Prep/Rev Time: \_\_\_\_\_

**Type of Search**

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S2	1685	CI=(SN SS (S) O SS) (S) NE=2
S3	857	CI=(PB SS (S) O SS) (S) NE=2
S4	544	CI=(NI SS (S) O SS) (S) NE=2
S5	1227240	CU OR COPPER
S6	91114	CUPROUS (W) OXIDE OR CU <sub>2</sub> O OR COPPER (W) OXIDE OR CU (W) O
S7	305185	(COMPOSITE? ? OR MIXTURE? ?) (2N) MATERIAL? ?
S8	94786	THERMAL (W) EXPANSION
S9	136444	THERMAL? (W) CONDUCTIV?
S10	1458891	GOLD OR AU
S11	425896	SILVER OR AG
S12	2383244	AL OR ALUMINIUM OR ALUMINUM
S13	45214	TIN (W) OXIDE OR SNO OR SN (W) O OR EPS (W) 6 OR NALCO OR SNS 10T OR STANNOXYL OR TIXOLEX 24
S14	5738	LEAD (W) OXIDE OR PIGMENT (W) YELLOW OR LEAD (W) MONOXIDE OR LEAD (W) PROTOXIDE OR LEAD (W) OXIDE OR LITHARGE OR LITHARGE (W) YELLOW OR PIGMENT (W) YELLOW OR PLUMBOUS OXIDE OR YELLOW (W) LEAD (W) OCH- ER
S15	34509	NICKEL (W) OXIDE OR NIO OR NI (W) O OR MONONICKEL (W) OXIDE OR NICKEL (W) MONOXIDE OR NICKEL MONOXIDE OR NICKEL (W) OXIDE OR NICKEL (W) OXIDE OR NICKELOUS (W) OXIDE
S16	91916	S5 AND (S6 OR S1)
S17	1778	S7 (3N) SINTER?
S18	22	S16 AND S17
S19	512	S16 AND S8
S20	30	S19 AND S9
S21	52	S18 OR S20
S22	46	RD (unique items)
S23	22	S18
S24	22	RD (unique items)
S25	30	S20 NOT S18
S26	24	RD (unique items)
S27	113877	(S5 OR S11 OR S10 OR S12) AND (S6 OR S13 OR S1 OR S3 OR S14 OR S15 OR S4)
S28	26	S27 AND S17
S29	4	S28 NOT (S18 OR S20)
S30	1409	S27 AND S7
S31	235	S30 AND SINTER?
S32	16	S31 AND PLASTIC? ?
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S34	15	RD (unique items)
S35	5087	AU=(KONDO, YASUO OR KONDO YASUO OR KONDO, Y OR KONDO Y)
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S37	787	AU=(AONO, TASUHISA OR AONO TASUHISA OR AONO T OR AONO, T)
S38	1229	AU=(SAITO, RYUICHI OR SAITO RYUICHI OR SAITO R OR SAITO, R)
S39	7124	(S35:S38) NOT (S18 OR S20 OR S32 OR S20 OR S18 OR S29)
S40	13	S39 AND S16
S41	11	RD (unique items)
S42	18	S39 AND S27
S43	5	S42 NOT S40
S44	5	RD (unique items)

02/14/2003

24/3,AB/1 (Item 1 from file: 2)  
DIALOG(R)File 2:INSPEC  
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03695899 INSPEC Abstract Number: A90112596  
Title: A new technology for obtaining strips and wires from composite superconducting material  
Author(s): Leszczynski, J.; Jackiewicz, J.  
Author Affiliation: Dept. of Mater. Sci., Inst. of Principles of Electr. Power Eng., Tech. Univ., Lodz, Poland  
Conference Title: Proceedings of the European Conference on High-T/<sub>sub</sub> c/Thin Films and Single Crystals p.518-26  
Editor(s): Gorzkowski, W.; Gutowski, M.; Reich, A.; Szymczak, H.  
Publisher: World Scientific, Singapore  
Publication Date: 1990 Country of Publication: Singapore xvii+782 pp.  
ISBN: 981 02 0109 5  
Conference Date: 30 Sept.-4 Oct. 1989 Conference Location: Ustron, Poland

Language: English

Abstract: **Composite** superconducting **material** was obtained by **sintering** together powdered high temperature superconductors of the type Y-Ba-Cu-O (or its substrate), with similar Ag powder, the amount of which was from 0.5 up to 10 parts for 1 part of the ceramics material. The optimisation of the thermal treatment in the O/<sub>sub</sub> 2/ atmosphere enabled the authors to obtain superconductivity in composites containing sintered silver. Thanks to its high plasticity the composite AgYBa/<sub>sub</sub> 2/Cu/<sub>sub</sub> 3/O/<sub>sub</sub> 7-y/, with appropriate Ag content, may be used to produce thin strips or wires superconducting at liquid nitrogen temperature. The mechanical treatment consists of repeated rolling, pull broaching or high pressure extrusion. To receive superconducting transport current additional sintering in O/<sub>sub</sub> 2/ atmosphere is necessary. The results of microscopic and diffractometric investigations as well as the influence of temperature and magnetic field on the transport properties are presented.

Subfile: A

24/3,AB/2 (Item 1 from file: 6)  
DIALOG(R)File 6:NTIS  
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1649349 NTIS Accession Number: AD-A248 706/4  
Effect of Lead Oxide and Titania on the Structure, Morphology and Superconductivity of Y-Ba-Cu-O Ceramic Materials

(Interim rept. Oct 90-Sep 91)

Rao, A. S.

Naval Surface Warfare Center Carderock Div., Bethesda, MD. Ship Materials Engineering Dept.

Corp. Source Codes: 103708001; 424512

Report No.: DTRC/SME-92-09

31 Jan 92 22p

Languages: English

Journal Announcement: GRAI9215

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The effect of the addition of PbO and TiO<sub>2</sub>, in the concentration range 0 15 wt.%, on crystal structure, morphology and superconductivity of



02/14/2003

YBa<sub>2</sub>Cu<sub>3</sub>O<sub>6</sub>+X was investigated. The results suggest that the addition of either TiO<sub>2</sub> or PbO (for PbO concentration above 3 wt.%) reduces the primary particle size of YBa<sub>2</sub>Cu<sub>3</sub>O<sub>6</sub>+X. Both TiO<sub>2</sub> and PbO tends to stabilize the non superconducting tetragonal phase at the expense of superconducting orthorhombic phase of YBa<sub>2</sub>Cu<sub>3</sub>O<sub>6</sub>+X. The orthorhombic - tetragonal phase transformation appears to be related to the additive induced oxygen depletion of YBa<sub>2</sub>Cu<sub>3</sub>O<sub>6</sub>+X to form Y<sub>2</sub>BaCuO<sub>y</sub>. Such a phase transformation process not only increases the normal state resistance of the superconductor, but also lowers the superconducting transition temperature.

24/3,AB/3 (Item 1 from file: 8)  
DIALOG(R)File 8:Ei Compendex(R)  
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05510347

E.I. No: EIP00035098134  
Title: Role of CuO-MO//x in low-fire high dielectric ceramics for multilayer capacitors  
Author: Chen, San-Yuan  
Corporate Source: Natl Chiao-Tung Univ, Hsinchu, Taiwan  
Conference Title: Proceedings of the 1998 2nd Asian Meeting on Ferroelectricity (AMF-2)  
Conference Location: Singapore, Singapore Conference Date: 19981207-19981211  
E.I. Conference No.: 56392  
Source: Ferroelectrics v 231 n 1-4 pt 3 1999. p 849/261 - 854/266  
Publication Year: 1999  
CODEN: FEROA8 ISSN: 0015-0193  
Language: English  
Abstract: CuO-based oxide mixtures were selected as sintering aid for (Ba,Ca)(Ti,Zr)O//3 ceramics. Both microstructure and dielectric properties of were remarkably influenced by BaCO//3-CuO flux type. With 1 wt% additive of BaCuO//2-2.5CuO eutectic phase, (Ba,Ca)(Ti,Zr)O//3 ceramics give high dielectric constant of 11000 and uniform grain size of 4 approx. 10 mu m when sintered at 1130 degree C for 1 h. Different kinds of CuO-MO//x mixtures were also used to investigate the role of MO//x metal oxide in the grain growth and densification of CuO-added (Ba,Ca)(Ti,Zr)O//3 ceramics. The eutectic temperature between CuO and MO//x plays an important key in microstructure evolution. Both dielectric properties and microstructure can be further modified with doping secondary oxides. (Author abstract) 10 Refs.

24/3,AB/4 (Item 2 from file: 8)  
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04098122

E.I. No: EIP95022600705  
Title: Effect of Ag//20 on the formation of High-Tc phase in the BPSCCO/Ag//20 composites  
Author: Chiu, Y.D.; Kao, C.H.; Lei, T.S.; Wu, M.K.  
Corporate Source: Natl Taiwan Inst of Technology, Taipei, Taiwan  
Conference Title: Proceedings of the International Conference on Materials and Mechanisms of Superconductivity High Temperature Superconductors. Part 1  
Conference Location: Grenoble, Fr Conference Date: 19940705-19940709  
E.I. Conference No.: 42501  
Source: Physica C: Superconductivity v 235-240 n pt 1 Dec 1994. p 485-486  
Publication Year: 1994

02/14/2003

CODEN: PHYCE6 ISSN: 0921-4534

Language: English

Abstract: The effects of Ag//20 on the formation of the high-Tc Bi-Pb-Sr-Ca-Cu-O phase were investigated. The slopes for the formation of high-Tc phase are about 0.39 and 1.56 for BPSCCO and BPSCCO/Ag//20 pellets, respectively. On the other hand, the results also indicated that the addition of Ag//20 in the samples reduced the partial melting temperature and strongly enhanced the formation of high-Tc phase in a lower sintering temperature (831 degree C). (Author abstract) 10 Refs.

24/3,AB/5 (Item 3 from file: 8)

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04098085

E.I. No: EIP95022600668

Title: Microstructure of YBa//2Cu//3O//7// minus //x(123)-Y//2BaCuO//5(21

1) sintered powder composites

Author: Sargankova, I.; Diko, P.

Corporate Source: Inst of Experimental Physics, Kosice, Slovakia

Conference Title: Proceedings of the International Conference on Materials and Mechanisms of Superconductivity High Temperature Superconductors. Part 1

Conference Location: Grenoble, Fr Conference Date: 19940705-19940709

E.I. Conference No.: 42501

Source: Physica C: Superconductivity v 235-240 n pt 1 Dec 1994. p 411-412

Publication Year: 1994

CODEN: PHYCE6 ISSN: 0921-4534

Language: English

Abstract: The possibility of 123-211 composite preparation by sintering of powders at 995 degree C via liquid phase sintering of the compositions with CuO (001) is shown in the paper. Influence of 211 particles on grain growth is discussed. (Author abstract) 3 Refs.

24/3,AB/6 (Item 4 from file: 8)

DIALOG(R)File 8:Ei Compendex(R)

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03603762

E.I. Monthly No: EIM9305-025253

Title: Properties of Emerging P/M Materials.

Author: Anon (Ed. )

Conference Title: Proceedings of the 1992 Powder Metallurgy World Congress. Part 8 (of 9)

Conference Location: San Francisco, CA, USA Conference Date: 19920621

E.I. Conference No.: 17738

Source: Properties of Emerging P/M Materials Advances in Powder Metallurgy v 8 1992. Publ by Metal Powder Industries Federation, Princeton, NJ, USA. 337p

Publication Year: 1992

CODEN: APMEED ISSN: 1042-8860 ISBN: 1-878954-27-X

Language: English

Abstract: This volume contains 27 papers from the conference proceedings. Some of the topics discussed by the papers are cited as examples: the damping properties of consolidated nano iron powders; influence of preparation conditions on structural properties of nanocrystalline powdered copper; aluminum contamination of cemented carbides during sintering; reinforced high speed steels as metal matrix composites; Ferro-Tic cermets for erosion resistant applications; observation on Ni-enhanced W grain

02/14/2003

growth in W-wire bundle model; properties and processing of niobium superalloys by injection molding; properties improvement of R.S. P/M Al-Si-X alloys for high temperature applications by means of modified degassing; sintering of bulk high-T//c superconductors: Y-Ba-Cu-O; mechanical properties of TiB//2 wear resistant materials; the structure of cermets manufactured by hot pressure impulse methods; and influence of carbide powder composition on properties of air plasma sprayed coatings.

24/3,AB/7 (Item 1 from file: 34)  
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci  
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01073397 Genuine Article#: FU593 Number of References: 27  
Title: MAGNETIZATION AND CRITICAL CURRENT-DENSITY RELATED TO MICROSTRUCTURE IN Y1BA2CU3O-APPROXIMATELY-7-AG COMPOSITES (Abstract Available)  
Author(s): KHAN HR; THOMPSON JR; OSSANDON JG  
Corporate Source: FORSCHUNGSINT EDELMET & MET CHEM/D-7070 SCHWABISCH GMUND//FED REP GER//; OAK RIDGE NATL LAB,DIV SOLID STATE/OAK RIDGE//TN/37831; UNIV TENNESSEE,DEPT PHYS/KNOXVILLE//TN/37996  
Journal: SUPERCONDUCTOR SCIENCE & TECHNOLOGY, 1991, V4, N4, P133-136  
Language: ENGLISH Document Type: ARTICLE  
Abstract: A magnetization study has been performed, for temperatures in the range from 4.5 to 60 K and magnetic induction fields up to 6.5 T, on a series of Y1Ba2Cu3O7-Ag **composite materials** prepared by powder **sintering** techniques. The temperature dependence of the intragrain critical current density J(c-intra) was determined and related to a flux creep model to obtain estimates for the flux pinning potential near 40 meV. Very similar values were obtained for pure YBCO material. These results indicate that the intragrain properties were not affected by the addition of Ag to these composites.

24/3,AB/8 (Item 1 from file: 144)  
DIALOG(R)File 144:Pascal  
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14539659 PASCAL No.: 00-0204457  
Fabrication of multi-filamentary Y123 superconductor  
GOTO T; KIRA T; HIEI H; WATANABE K  
Department of Materials Science & Engineering, Nagoya Institute of Technology, Gokisocho, Showa-ku, Nagoya 466-8555, Japan; Institute for Materials Research, Tohoku University, 2-1-1 Katahira, Aoba-ku, Sendai 980-8577, Japan  
Journal: Journal of materials science, 2000, 35 (7) 1603-1606  
Language: English  
The precursor Y SUB 1 Ba SUB 2 Cu SUB 3 O SUB x (Y123) filaments were prepared by solution spinning through aqueous poly(vinyl alcohol) solution containing mixed Y, Ba and Cu acetates. The as-drawn filaments were heated to remove volatile components and to generate a superconducting phase. The filamentary superconductors were passed through Ag paste and sintered. By controlling the heating condition, the composite with excellent connection between the filaments and metallic Ag matrix was obtained. The overall transport critical current density (J SUB e ) of more than 2000 A/cm SUP 2 at 77 K and 0 T was achieved for the composite with partially melted Y123 filaments. Although the J SUB e value decreased by applying a low magnetic field less than 0.1 T, the superconductivity of the composite maintained at 10 T at 77 K.  
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24/3,AB/9 (Item 2 from file: 144)  
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14469211 PASCAL No.: 00-0129743  
Densification and decomposition of YBa SUB 2 Cu SUB 3 O SUB 7 SUB -  
SUB y ceramic, and Ag-YBa SUB 2 Cu SUB 3 O SUB 7 SUB - SUB y cermet  
compositions in the peritectic range  
BENAVIDEZ E R; DE SANCTIS O; FISCINA J E; GONZALEZ OLIVER C J R  
Universidad Tecnologica Nacional, Colon 332, (2900) San Nicolas,  
Argentina; Laboratorio de Materiales Ceramicos, FCEIyA, Universidad  
Nacional de Rosario-CONICET, Av. Pellegrini 250, 2000 Rosario, Argentina;  
Instituto Balseiro, Universidad Nacional de Cuyo, Centro Atomico Bariloche  
(CNEA), C.C.339, 8400 S. C. de Bariloche (RN), Argentina  
Journal: Journal of materials science letters, 2000, 19 (4) 307-310  
Language: English

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24/3,AB/10 (Item 3 from file: 144)  
DIALOG(R)File 144:Pascal  
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13778342 PASCAL No.: 98-0491575  
Sintering process and mechanical properties in steel/superconductor  
granular composites  
SIWEK A; SULIGA I; GAVARRI J R; PISCHEDDA M H; JASIENSKA S  
University of Mining and Metallurgy, Department of Metallurgy and  
Material Science, Faculty of Engineering and Material Analysis, al.  
Mickiewicza 30, 30-059 Cracow, Poland; Universite de Toulon et du Var,  
Faculte des Sciences et Techniques, Laboratoire des Materiaux Multiphases  
et Interfaces, BP 132, 83 957 La Garde, France  
Journal: Solid state ionics, 1998, 112 (1-2) 79-85  
Language: English

A study of two-phase composite pellets obtained from powders of stainless  
steel and of a bismuth cuprate superconductor (Bi SUB 2 SUB x Pb SUB x Sr  
SUB 2 Ca SUB 2 Cu SUB 3 O SUB 1 SUB 0 SUB - SUB x ) has been carried  
out, using scanning electron microscopy, magnetic field expulsion analyses  
and elastic modulus measurements. Each composite sample is defined by its  
initial volume fraction. its sintering temperature and sintering duration.  
The magnetic responses of the composites are determined from levitation  
experiments. The Young modulus E and the elastic limit R SUB c are measured  
from compression experiments. A correlation between the scanning electron  
images. the levitation forces F SUB 1 SUB e SUB v and the elastic  
properties is established. When the volume fraction of steel or the  
sintering temperature increase. the Young modulus E and the elastic limit R  
SUB c both decrease. When the sintering duration increases. the elastic  
properties are improved. The role of pores and of the liquid phase formed  
during the sintering process is discussed.

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24/3,AB/11 (Item 4 from file: 144)  
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12412794 PASCAL No.: 96-0066346  
Property relationships for sintered YBCO/Ag composites

02/14/2003

SALIB S; VIPULANANDAN C  
Texas cent. superconductivity, Univ. Houston, materials eng. lab., Univ.  
Houston, Houston TX 77204-4791, USA  
Journal: Applied superconductivity, 1995, 3 (5) 259-267  
Language: English

24/3,AB/12 (Item 5 from file: 144)  
DIALOG(R)File 144:Pascal  
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12395751 PASCAL No.: 96-0044282  
Effect of Ag on processing and properties of Bi- and Tl-based HTSC  
materials  
PARK C; MISTURE S T; SRIRAM D; SNYDER R L  
New York State coll. ceramics, inst. ceramic superconductivity, Alfred  
univ., Alfred NY 14802, USA  
Symposium on synthesis, processing, and large-scale applications of  
high-temperature superconductor (Las Vegas NV USA) 1995-02  
Journal: Journal of electronic materials, 1995, 24 (12) 1897-1902  
Language: English

24/3,AB/13 (Item 6 from file: 144)  
DIALOG(R)File 144:Pascal  
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12276595 PASCAL No.: 95-0507240  
Processing of extruded BPSCCO superconductor-PMMA composite for sintering  
and texture development  
HAREESH U S; SUNIL KUMAR C; MANI T V; ANIL KUMAR G M; DAMODARAN A D;  
WARRIER K G K  
Council sci. industrial res., regional res. lab., Trivandrum 695 019,  
India  
Journal: Nippon seramikkusu kyokai gakuji ronbunshi, 1995, 103 (7)  
657-659

Language: English  
Bi-based superconducting shapes were fabricated by extrusion of  
ceramic-polymer mixture involving a sol-gel derived superconductor and in  
situ polymerized polymethylmethacrylate as binder. The powder was  
intimately mixed with methylmethacrylate monomer and polymerized in the  
presence of other organic additives such as butylbenzyl phthalate,  
phosphate ester and benzoyl peroxide. The viscous mass was then extruded to  
wires 3 mm in diameter and 25 mm in length. They were heat-treated at  
controlled rates for binder burn out and sintering at 840 Degree C for 20h.  
Zone melting refining was carried out on the sintered samples in a  
three-zone furnace at a controlled speed of 30 mm per hour for introducing  
texture. The surface morphology of starting powder and microstructure of  
fractured surface of sintered and textured wires are presented and  
compared.

24/3,AB/14 (Item 7 from file: 144)  
DIALOG(R)File 144:Pascal  
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11965359 PASCAL No.: 95-0146258  
High T SUB c dual phase Ag-YBa SUB 2 Cu SUB 3 O SUB 7 SUB - SUB x  
composites prepared by selective laser sintering and infiltration  
AGARWALA M K; BOURELL D L; MANTHIRAM A; BIRMINGHAM B R; MARCUS H L  
Univ. Texas Austin, cent. materials sci. eng., Austin TX 78712, USA

02/14/2003

Journal: Journal of materials science, 1995, 30 (2) 459-464

Language: English

Bulk porous samples of  $\text{YBa}_{1-x}\text{Cu}_x\text{O}_{7-\delta}$  were made from powders by selective laser sintering, a near-net-shape forming technology requiring no part-specific tooling. The porous parts were densified by infiltrating silver into the pores, resulting in a dense, dual-phase superconducting composite. The laser-processing parameters were varied to obtain the optimum microstructure. The laser-sintered parts required oxygen annealing after infiltration to restore the orthorhombic, superconducting structure. X-ray diffraction (XRD) and  $T_c$  measurements indicated that some impurity phases were present in samples processed under aggressive laser conditions

24/3,AB/15 (Item 8 from file: 144)

DIALOG(R)File 144:Pascal

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11764442 PASCAL No.: 94-0635829

Critical current density of polycrystalline  $\text{YBa}_{1-x}\text{Cu}_x\text{O}_{7-\delta}$  consisting of tin-coated grains

ZHENG X G; MIZUTA N; KURIYAKI H; HIRAKAWA K

Kyushu univ., fac. eng., dep. electronics, Fukuoka 812, Japan

Journal: Physica. C. Superconductivity, 1994, 230 (3-4) 306-310

Language: English

Tin and its oxides have been introduced into the intergrain areas of polycrystalline  $\text{YBa}_{1-x}\text{Cu}_x\text{O}_{7-\delta}$  by coating the crystalline grains with a thin layer of tin and sintering the ceramics in flowing oxygen and argon. The transport critical current density  $J_c$  at 77 K in a magnetic field of 0-1.5 T is enhanced as a result of the coating. A probable improvement of the intergrain weak links is suggested

24/3,AB/16 (Item 9 from file: 144)

DIALOG(R)File 144:Pascal

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11667460 PASCAL No.: 94-0525361

Structure of hot pressed  $\text{Ag-BiPbSrCaCuO}$  composites

MITOSE K; ECHIGOYA J; TAYA M

Tohoku univ., fac. eng., dep. materials processing, Aoba, Sendai 980, Japan

Journal: Journal of materials science letters, 1994, 13 (12) 875-878

Language: English

24/3,AB/17 (Item 10 from file: 144)

DIALOG(R)File 144:Pascal

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11640059 PASCAL No.: 94-0492077

Superconducting properties and structures of high- $T_c$  oxides prepared by a citric acid salt process

II: Superconducting materials

SHIOMI Y; ASAKA T; TACHIKAWA K

GREEN Michel A, ed

Tokai univ., fac. eng., Hiratsuka Kanagawa 259-12, Japan

Lawrence Berkeley Laboratory, Berkeley CA 94720, USA

Applied Superconductivity Conference, Terra incognita.

ASC' 92. Conference (Chicago IL USA) 1992-08-23

Journal: IEEE Transactions on applied superconductivity, 1993, 3 (1 p.3)

02/14/2003

1170-1173

Language: English

YBa SUB 2 Cu SUB 3 O SUB 7 SUB - SUB x (123) high-T SUB c oxide superconductor was successfully prepared through a citric acid salt process. The effects of Ag addition as well as Zr substitution for Y on the structures and the superconducting properties of the specimens were studied. The addition of 10-30wt% Ag decreases the optimum sintering temperature to achieve highest T SUB c by ca. 50 Degree C. Furthermore, the effect of fine Ag precipitates on J SUB c was studied. The 5at% Zr substitution for Y produces much smaller 123 grains with uniform grain size. Both the Ag addition and the Zr substitution enhance the J SUB c (77K, 0T) of 123 specimen by a factor of several. The simultaneous addition of Ag and Zr suppresses the decreasing of J SUB c by the prolonged sintering

24/3,AB/18 (Item 11 from file: 144)

DIALOG(R)File 144:Pascal

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11589851 PASCAL No.: 94-0476110

Effects of sintering temperature on the superconducting and microstructural properties of Bi SUB 1 SUB . SUB 7 Pb SUB 0 SUB . SUB 4 Sr SUB 1 SUB . SUB 6 Ca SUB 2 SUB . SUB 4 Cu SUB 3 SUB . SUB 6 O SUB y /Ag SUB 2 O composites

CHIU Y D; LEI T S; KAO C H

National Taiwan inst. technology, dep. mechanical eng., Taipei, Taiwan

Journal: Journal of materials science, 1994, 29 (10) 2678-2682

Language: English

The effects of sintering temperature on the superconducting and microstructure properties of Bi SUB 1 SUB . SUB 7 Pb SUB 0 SUB . SUB 4 Sr SUB 1 SUB . SUB 6 Ca SUB 2 SUB . SUB 4 Cu SUB 3 SUB . SUB 6 O SUB y (BPSCCO)/Ag SUB 2 O (0-50 wt%) superconductors were investigated. Based on the differential thermal analysis data, it was found that the addition of Ag SUB 2 O to the BPSCCO system lowered the partial melting temperature (peritectic point), thereby promoting extra liquid formation in this system and affecting the stability of 2223 high-T SUB c phase of these composites. For example, the T SUB c (zero) of the B PSCCO/Ag SUB 2 O (10 wt %) composite which was sintered at 843 Degree C in air was depressed by as much as 52 K

24/3,AB/19 (Item 12 from file: 144)

DIALOG(R)File 144:Pascal

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11572293 PASCAL No.: 94-0457809

En Japonais

(Microstructures of metal-oxide composites formed by solid-state displacement reaction)

TAIMATSU H; SUZUKI S; KITANO M; KANEKO H

Akita univ., Mining coll., dep. materials eng. applied chemistry, Akita-shi 010, Japan

Journal: Nippon seramikkusu kyokai gakujutsu ronbunshi, 1994, 102 (2)

170-174

Summary Language: English

Several metal-oxide composites have been made by solid-state displacement reactions between powders of metals and oxides, and their structures have been examined metallographically. In the Cu SUB 2 O-Ni system, in which the sandwich-type reaction couple forms products with a typical layered arrangement, spherical NiO grains scattered in the Cu matrix;

02/14/2003

the size of oxide spheres was determined by the particle size of the metal powder used. In the NiO-Ti, Cu SUB 2 O-Fe and Cu SUB 2 OTi systems, in which the sandwich-type reaction couples form products with aggregate arrangements, metal and oxide product phases were finely interwoven; the microstructures were independent of the particle size of the metal powders used (...)

24/3,AB/20 (Item 13 from file: 144)  
DIALOG(R)File 144:Pascal  
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11216594 PASCAL No.: 94-0034022  
Phase evolution in silver-doped BiPbSrCaCuO(2223)/Ag superconducting composites  
GUO Y C; LIU H K; DOU S X  
Univ. New South Wales, school materials sci. eng., Kensington N.S.W. 2033, Australia  
Journal: Journal of materials research, 1993, 8 (9) 2187-2190  
Language: English

24/3,AB/21 (Item 14 from file: 144)  
DIALOG(R)File 144:Pascal  
(c) 2003 INIST/CNRS. All rts. reserv.

10707471 PASCAL No.: 93-0216785  
Preparation and critical current density of melt-processed Y-Ba-Cu-O thick films and AgPd-sheathed tapes  
FISCHER K; LEITNER G; FUCHS G; SCHUBERT M; SCHLOBACH B; GLADUN A; RODIG C  
Inst. solid state materials res. Dresden eV, O-8027 Dresden, Federal Republic of Germany  
Critical currents in high Tc superconductors. Conference (Vienna AUT) 1992-04-22  
Journal: Cryogenics, 1993, 33 (1) 97-103  
Language: English

24/3,AB/22 (Item 15 from file: 144)  
DIALOG(R)File 144:Pascal  
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09149284 PASCAL No.: 90-0317665  
Bi(Pb)-Sr-Ca-Cu-O superconducting composite tapes prepared by the powder method using an Ag sheath  
KUMAKURA H; TOGANO K; MAEDA H; MIMURA M  
National res. inst. metals, Tsukuba-City, Ibaraki 305, Japan  
Journal: Journal of applied Physics, 1990, 67 (7) 3443-3447  
Language: English

On obtient une microstructure orientee par les grains avec l'axe c perpendiculaire a la surface du ruban pour les materiaux a T SUB c elevee par combinaison du roulement a froid et le frittage. Amelioration du courant critique du ruban a T SUB c elevee par l'orientation de grains. On observe une anisotropie de J SUB c en fonction de la direction du champ magnetique pour les rubans textures. Pour les materiaux a faible T SUB c , il est difficile d'obtenir une microstructure orientee par les grains. La faible sensibilite du courant critique a 4,2 K des rubans a base de Bi indique que ces materiaux sont de bons candidats pour des aimants supraconducteurs a champ intense



02/14/2003

26/3,AB/1 (Item 1 from file: 2)  
DIALOG(R)File 2:INSPEC  
(c) 2003 Institution of Electrical Engineers. All rts. reserv.

7092094 INSPEC Abstract Number: B2001-12-0170J-067

Title: Noble high **thermal conductivity**, low **thermal expansion** Cu-Cu<sub>2</sub>O composite base plate technology for power module application

Author(s): Saito, R.; Kondo, Y.; Koike, Y.; Okamoto, K.; Suzumura, T.; Abe, T.

Author Affiliation: Res. Lab., Hitachi Ltd., Ibaraki, Japan

Conference Title: Proceedings of the 13th International Symposium on Power Semiconductor Devices & ICs. IPSD '01 (IEEE Cat. No.01CH37216) p. 51-4

Publisher: Inst. Electr. Eng. Japan, Tokyo, Japan

Publication Date: 2001 Country of Publication: Japan xxxi+467 pp.

ISBN: 4 88686 056 7 Material Identity Number: XX-2001-01446

Conference Title: Proceedings of the 13th International Symposium on Power Semiconductor Devices & ICs. IPSD '01

Conference Sponsor: Inst. Electr. Eng. Japan

Conference Date: 4-7 June 2001 Conference Location: Osaka, Japan

Language: English

Abstract: Noble high **thermal conductivity** and low **thermal expansion** Cu-Cu<sub>2</sub>O composite base plate was developed and successfully applied to power modules. Metal matrix composite consists of Cu and Cu oxide was demonstrated to show excellent combination of **thermal conductivity** and **thermal expansion**. This noble Cu-Cu<sub>2</sub>O base plate was applied to power module, and high reliability and high **thermal conductivity** of the module were confirmed. Anisotropic thermal property of Cu-Cu<sub>2</sub>O base plate by controlling the microstructure of composite was also demonstrated.

Subfile: B

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26/3,AB/2 (Item 2 from file: 2)  
DIALOG(R)File 2:INSPEC  
(c) 2003 Institution of Electrical Engineers. All rts. reserv.

6564076 INSPEC Abstract Number: B2000-05-3220M-031

Title: Properties of Bi-2223/(Ag+Au) tapes

Author(s): Akimov, I.I.; Kozlenkova, N.I.; Kuznetsov, P.A.; Rakov, D.N.; Shikov, A.K.; Bogdanov, I.V.; Kozub, S.S.; Olyunin, A.A.; Shcherbakov, P.A.

Author Affiliation: Bochvar (A.A.) All-Union Sci. Res. Inst. of Inorg. Mater., Moscow, Russia

Journal: IEEE Transactions on Applied Superconductivity

Conference Title: IEEE Trans. Appl. Supercond. (USA) vol.10, no.1 p. 1493-5

Publisher: IEEE,

Publication Date: March 2000 Country of Publication: USA

CODEN: ITASE9 ISSN: 1051-8223

SICI: 1051-8223(200003)10:1L.1493:P2AT;1-V

Material Identity Number: 0646-2000-002

U.S. Copyright Clearance Center Code: 1051-8223/2000/\$10.00

Conference Title: 16th International Conference on Magnet Technology (MT-16 1999)

Conference Date: 26 Sept.-2 Oct. 1999 Conference Location: Tallahassee, FL, USA

Language: English

02/14/2003

Abstract: Bi-2223 tapes with Ag-1 at.% Au and Ag-10 at.% Au matrices were fabricated for superconducting magnet current leads. The dependence of critical current on both temperature and magnetic field was studied. Electrical resistance, **thermal conductivity**, heat capacity and thermal contraction of the (Ag+Au) alloy matrix and HTS tapes were measured. Mechanical characteristics of HTS tapes at 77 K are presented.

Subfile: B

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26/3,AB/3 (Item 3 from file: 2)

DIALOG(R)File 2:INSPEC

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6072505 INSPEC Abstract Number: A9824-8140N-019

Title: Addition of **copper** particles to an alumina matrix

Author(s): Aldrich, D.E.; Edirisinghe, M.J.

Author Affiliation: Dept. of Mater. Eng., Brunel Univ., Uxbridge, UK

Journal: Journal of Materials Science Letters vol.17, no.12 p.965-7

Publisher: Kluwer Academic Publishers,

Publication Date: 15 June 1998 Country of Publication: USA

CODEN: JMSLD5 ISSN: 0261-8028

SICI: 0261-8028(19980615)17:12L.965:ACPA;1-4

Material Identity Number: H146-98003

U.S. Copyright Clearance Center Code: 0261-8028/98/\$9.50

Language: English

Abstract: The addition of metal particles to oxide ceramics such as alumina (Al/sub 2/O/sub 3/) is not novel, but despite recent advances the behavior of ceramic-metal interfaces is not clearly understood. Metal particles help to pin grain boundaries in the ceramic and inhibit grain growth during sintering. However, thermal stresses are set up at the ceramic-metal interface during cooling after sintering due to the appreciable difference in **thermal expansion** coefficients of the two materials. Therefore, metal particles above a critical size will induce fracture at the interface and become debonded from the ceramic matrix. It is only when the correct size distribution is achieved that there be a significant contribution to the fracture toughness of the ceramic from the plastic stretching of the metallic particles. The metallic particles will also increase the **thermal conductivity** of the ceramic and therefore the thermal shock resistance of the composite will be enhanced by this and by the increase in fracture toughness. The increase of fracture toughness can be enhanced by using high volume fractions of metallic particles. This could be acceptable for structural ceramics, but for electrical applications (e.g., solid oxide electrolytes) if the volume fraction of metallic particles used is excessive, percolation will interfere with the ionic conductivity of the ceramic. This communication describes our preliminary studies on Al/sub 2/O/sub 3/ reinforced with 5 vol% of **Cu**. This is a model system, with the volume of filler well below the percolation threshold expected in these types of systems, and paves the way for research into more practical but complex systems based on ceria reinforced with several types of metal particles.

Subfile: A

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26/3,AB/4 (Item 4 from file: 2)

DIALOG(R)File 2:INSPEC

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04270622 INSPEC Abstract Number: A9223-7430E-009

Title: Low temperature specific heat and **thermal conductivity**

02/14/2003

of high temperature superconductors

Author(s): Hussey, N.E.; McMenamin, C.S.; Bird, J.P.; Brewer, D.F.; Thomson, A.L.; Young, A.J.

Author Affiliation: Phys. Lab., Sussex Univ., Falmer, UK

Conference Title: Electronic Properties and Mechanisms of High T/sub c/ Superconductors. Proceedings of the International Workshop p.329-31

Editor(s): Oguchi, T.; Kadowaki, K.; Sasaki, T.

Publisher: North-Holland, Amsterdam, Netherlands

Publication Date: 1992 Country of Publication: Netherlands xv+433 pp.

ISBN: 0 444 89345 8

Conference Sponsor: Japan Atomic Energy Res. Inst

Conference Date: 29-31 July 1991 Conference Location: Tsukuba, Japan

Language: English

Abstract: The authors present simultaneous measurements of the low temperature (0.04 K to 1.2 K) specific heat and **thermal conductivity** of a series of sintered samples from the LSCO, YBCO and Pb doped BSCCO systems. A weakening of the temperature dependence in the **thermal conductivity** from  $T/\text{sup}$  approximately=3/ to  $T/\text{sup}$  approximately=1/ was observed in all the samples below 1 K. The specific heat data are characterised by a large upturn at the lowest temperatures and, in the Lanthanum system, by the absence of a linear term in the superconducting regime. They discuss these effects in terms of possible transport mechanisms.

Subfile: A

26/3,AB/5 (Item 5 from file: 2)

DIALOG(R)File 2:INSPEC

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03996916 INSPEC Abstract Number: A91136284

Title: Thermal properties of the Bi-Sr-Ca-Mg-Cu-O system in the range 4.2 to 300 K

Author(s): Gololobov, E.M.; Novysh, B.V.; Prytkova, N.A.; Tomilo, Zh.M.; Shimanskaya, N.M.; Abeliou, Ya.A.; Maiornikova, G.V.; Yagina, A.B.

Author Affiliation: Inst. of Solid State & Semicond. Phys., Acad. of Sci., Minsk, Byelorussian SSR, USSR

Journal: Physica Status Solidi A vol.126, no.1 p.K25-30

Publication Date: 16 July 1991 Country of Publication: West Germany

CODEN: PSSABA ISSN: 0031-8965

Language: English

Abstract: Investigations of thermal properties of high-T/sub c/ superconductors (HTSC) such as: specific heat ( $C/\text{sub p/}$ ), linear **thermal expansion** coefficient (LTEC,  $\alpha$ ), **thermal conductivity** ( $\lambda$ ) are an effective method for the study of the nature of high-T/sub c/ superconductivity. The authors present experimental results on  $C/\text{sub p/}$ ,  $\alpha$ , and  $\lambda$  for the Bi-Sr-Ca-Mg-Cu-O system in the low temperature range.

Subfile: A

26/3,AB/6 (Item 6 from file: 2)

DIALOG(R)File 2:INSPEC

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03462218 INSPEC Abstract Number: A89115694

Title: Thermal properties of high temperature superconductors

Author(s): Gmelin, E.

Author Affiliation: Max-Planck-Inst. fur Festkorperforschung, Stuttgart, West Germany

Book Title: Studies of high temperature superconductors. Advances in

02/14/2003

research and applications. Vol.2 p.95-127

Editor(s): Narlikar, A.

Publisher: Nova Science Publishers, New York, NY, USA

Publication Date: 1989 Country of Publication: USA xvii+367 pp.

ISBN: 0 941743 55 1

Language: English

Abstract: The author gives a summary of experiments (and their interpretations) on the thermal properties (specific heat, **thermal conductivity, thermal expansion**) of the high temperature superconductors. The review includes data for La/sub 1.85/Ba/sub 0.15/CuO/sub 4/ and related barium and strontium compounds, for YBa/sub 2/Cu /sub 3/O/sub 7/ and its related rare earth compounds as well as compounds in which Ba has been substituted, and finally, for Bi/sub 2/Sr/sub 2/Ca/sub n-1/Cu/sub n/O/sub y/ and Tl/sub 2/Ba/sub 2/Ca/sub n-1/Cu/sub n/O/sub y/ with n=1,2,3, and their substitutions.

Subfile: A

26/3,AB/7 (Item 7 from file: 2)

DIALOG(R)File 2:INSPEC

(c) 2003 Institution of Electrical Engineers. All rts. reserv.

03349078 INSPEC Abstract Number: A89049162

Title: Properties of Y-Ba-Cu-O superconducting films synthesized by magnetron sputtering

Author(s): Antonova, E.A.; Ruzinov, V.L.; Stark, S.Yu.

Author Affiliation: Inst. of Steel & Alloys, Moscow, USSR

Journal: Pis'ma v Zhurnal Tekhnicheskoi Fizika vol.14, no.9-10 p. 908-12

Publication Date: May 1988 Country of Publication: USSR

CODEN: PZTFDD ISSN: 0320-0108

Translated in: Soviet Technical Physics Letters vol.14, no.5 p.402-4

Publication Date: May 1988 Country of Publication: USA

CODEN: STPLD2 ISSN: 0360-120X

U.S. Copyright Clearance Center Code: 0360-120X/88/050402-03\$02.60

Language: English

Abstract: The authors study the electrical properties and structure of Y/sub 1/Ba/sub 2/Cu/sub 3/O/sub z/ films synthesized by DC magnetron sputtering in a single technological cycle, without breaking vacuum or performing an auxiliary annealing, for various crystal structures and chemical compositions of the substrate.

Subfile: A

26/3,AB/8 (Item 8 from file: 2)

DIALOG(R)File 2:INSPEC

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03119037 INSPEC Abstract Number: A88055830

Title: Thermal properties and electron-phonon interactions in a YBa/sub 2/Cu/sub 3/O/sub 7- delta / superconducting compound

Author(s): Bayot, V.; Delannay, F.; Dewitte, C.; Erauw, J.-P.; Gonze, X.; Issi, J.-P.; Jonas, A.; Kinany-Alaoui, M.; Lambricht, M.; Michenaud, J.-P.; Minet, J.-P.; Piraux, L.

Author Affiliation: Univ. Catholique de Louvain, Belgium

Conference Title: Commission of the European Communities European Workshop on High T/sub c/ Superconductors and Potential Applications. Proceedings p.99-100

Publisher: Comm. Eur. Communities, Brussels, Belgium

Publication Date: 1987 Country of Publication: Belgium 465 pp.

Conference Date: 1-3 July 1987 Conference Location: Genova, Italy

02/14/2003

Language: English

Abstract: During the last few months, superconducting ceramic compounds of the type Y-Ba-Cu-O have been intensively studied all around the world. Among the physical properties of these fascinating materials, thermal properties have received less interest, in spite of the fact that they are a powerful method of investigation. The authors present and discuss here the first **thermal conductivity** measurements performed on these novel compounds. Electrical resistivity and thermopower measurements performed on the same sample are also presented. The temperature dependences of these effects are semi-quantitatively interpreted in the frame of the Boltzmann transport theory applied to superconducting alloys. The **thermal expansion** measurements of this high-T/sub c/ superconductor are qualitatively interpreted.

Subfile: A

26/3,AB/9 (Item 1 from file: 6)

DIALOG(R)File 6:NTIS

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1958601 NTIS Accession Number: DE96006156

Joining N2P ceramics. Final report

(PROGRESS REPT)

Nicklas, K. D. ; Richey, M. W. ; Holcombe, C. E. ; Santella, M. L.

Oak Ridge Y-12 Plant, TN.

Corp. Source Codes: 058598000; 9500170

Sponsor: Department of Energy, Washington, DC.

Report No.: Y/DV-1390

26 Sep 95 17p

Languages: English

Journal Announcement: GRAI9618; ERA9630

Sponsored by Department of Energy, Washington, DC.

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NTIS Prices: PC A03/MF A01

Objective was to assess techniques for joining N2P ceramics, a new family of ceramic materials that have low coefficient of **thermal expansion**, low **thermal conductivity**, and excellent thermal-shock resistance. Initially, the authors evaluated laser-beam welding over volatile fluxing agents (ferric oxide, **copper oxide**, boric acid, and boron nitride). They also examined other laser, arc-welding, brazing, and cold joining techniques. The N2P materials were capable of sustaining the thermal stresses associated with these joining processes without substantial cracking. Of the volatile fluxes, only the **copper oxide** promoted weld fusion. Efforts to accomplish fusion by laser-beam welding over **copper**, titanium, stainless steel, yttrium barium **copper oxide**, fused silica glass, and mullite/alumina were unsuccessful. Gas-tungsten arc welding accompanied by porosity, irregularities, and cracking was achieved on **copper** sheet sandwiched between N2P tiles. Attempts at conventional oxy-acetylene welding and torch brazing were unproductive. Silica-based oxide mixtures and **copper oxide**-based materials show potential for development into filler materials for furnace brazing, and phosphate-based cements show promise as a means of cold joining.

26/3,AB/10 (Item 2 from file: 6)

DIALOG(R)File 6:NTIS

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02/14/2003

1861343 NTIS Accession Number: DE95002123

High-frequency acoustic sensors for operation in a gaseous medium. Final report

(Progress rept)

Kino, G. S.

Stanford Univ., CA. Edward L. Ginzton Lab. of Physics.

Corp. Source Codes: 009225194; 9503734

Sponsor: Department of Energy, Washington, DC.

Report No.: DOE/ER/13797-T1; GL-4979

1990 133p

Languages: English

Journal Announcement: GRAI9509; ERA9511

Sponsored by Department of Energy, Washington, DC.

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NTIS Prices: PC A07/MF A02

Photothermal microscopy is a technique for measuring thermal properties on a small scale by using focused laser beams as heat sources and as temperature probes. Typically used for nondestructive evaluation (NDE) of materials, its main advantage is its ability to measure types of flaws that are not visible optically or acoustically. Because of the optical nature of photothermal microscopy, sub-micron resolutions can be obtained in many of these thermal measurements. The greatest limitation of these systems is their relatively poor signal-to-noise ratios and, consequently, slow imaging speeds. To circumvent this problem, a variety of approaches to the detection of thermal waves has been pursued in recent years. This thesis compares the relative merits of a common class of techniques that rely on direct observation of physical changes in the heated sample, including a novel approach to interferometric measurement of the **thermal expansion**. It is found that the optimum approach depends not only on the physical properties of the sample being studied, but also upon the resolution of the experiment and the damage threshold of the specimen. Finally, this dissertation describes the applications of photothermal microscopy to the study of the anisotropic thermal properties of the new high-(T<sub>c</sub>) superconductors. By adding a high-vacuum cryostat to the microscope, the authors have been able to study the influence of the superconducting transition on the **thermal conductivity**. The measurements of the anisotropic **thermal conductivity** demonstrate that the heat flow along the superconducting planes is enhanced below the transition, and that no such enhancement exists in the non-superconducting direction. Material examined was Bi-Ca-Sr-Cu-O.

26/3,AB/11 (Item 1 from file: 8)

DIALOG(R)File 8: Ei Compendex(R)

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04505191

E.I. No: EIP96093345977

Title: Hyperfine fields at the Ba site in YBa//2Cu//4O//8: an NMR and NQR study

Author: Lombardi, A.; Mali, M.; Roos, J.; Brinkmann, D.

Corporate Source: Universitat Zurich, Zurich, Switz

Source: Physica C: Superconductivity v 267 n 3-4 Aug 20 1996. p 261-269

Publication Year: 1996

CODEN: PHYCE6 ISSN: 0921-4534

Language: English

02/14/2003

Abstract: We report a nuclear quadrupole resonance (NQR) and nuclear magnetic resonance (NMR) study of the Ba isotopes,  $^{135}\text{Ba}$  and  $^{137}\text{Ba}$ , in  $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$ . The Knight shift, at 298 K, is zero indicating that no mobile charge carriers are present at the Ba site. The temperature (T) dependence of  $\chi/Q$ , which is caused by **thermal expansion**, can be described by a power law. The electric field gradient tensor at the Ba site is in good agreement with band structure calculations. The spin-spin relaxation rate is nearly constant between 56 and 400 K. The spin-lattice relaxation mechanism is of quadrupolar origin and its T dependence can be described perfectly by a two-phonon Raman process with a Debye temperature of 185(20) K, which agrees with the **thermal conductivity** result. Thus, the Ba site in  $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$  does not sense the spin fluctuations of the  $\text{CuO}_2$  plane. (Author abstract) 29 Refs.

26/3,AB/12 (Item 1 from file: 34)  
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci  
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02857071 Genuine Article#: MK366 Number of References: 30  
Title: ULTRASONIC STUDIES OF SOME BI-BASED HIGH-T(C) SUPERCONDUCTORS (Abstract Available)  
Author(s): REDDY PV; SHEKAR S  
Corporate Source: OSMANIA UNIV, DEPT PHYS/HYDERABAD 500007/ANDHRA PRADESH/INDIA/  
Journal: SUPERCONDUCTOR SCIENCE & TECHNOLOGY, 1993, V6, N11 (NOV), P785-789  
ISSN: 0953-2048  
Language: ENGLISH Document Type: ARTICLE  
Abstract: A series of  $\text{Bi}_{2-x}\text{Pb}_x\text{Sr}_2\text{Ca}_2\text{Cu}_3\text{O}_{10}$  ( $0 < x < 0.5$ ) high-T(c) superconductors has been prepared by the solid state reaction method. After characterization, ultrasonic longitudinal velocity and attenuation studies were undertaken over the temperature range 80-300 K using the pulse transmission technique. In contrast to normal solids, the ultrasonic velocities of all the samples in the temperature range 250-150 K are found to decrease with decreasing temperature (softening). It has also been observed that most of the samples are found to exhibit longitudinal attenuation peaks at temperatures almost-equal-to 250 K, almost-equal-to 170 K and almost-equal-to 100 K. A qualitative explanation for the softening of velocity and the attenuation peaks is given on the basis of microstructure and relaxation.

26/3,AB/13 (Item 2 from file: 34)  
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci  
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02783686 Genuine Article#: MD161 Number of References: 35  
Title: ULTRASONIC VELOCITY AND ATTENUATION STUDIES OF RE-Ba-Cu-O SUPERCONDUCTORS (Abstract Available)  
Author(s): REDDY PV; SHEKHAR S  
Corporate Source: OSMANIA UNIV, DEPT PHYS/HYDERABAD 500007/ANDHRA PRADESH/INDIA/  
Journal: PHYSICA C, 1993, V216, N1-2 (OCT 15), P116-123  
ISSN: 0921-4534  
Language: ENGLISH Document Type: ARTICLE  
Abstract: Ultrasonic longitudinal velocity and attenuation studies of a few RE-Ba-Cu-O superconductors over a temperature range 80-300 K have been carried out by the pulse transmission technique. The longitudinal velocity of most of the samples is found to decrease with

02/14/2003

decreasing temperature, attaining a minimum value at temperatures between 150 and 100 K. In the superconducting phase the velocity of all the samples is found to remain almost constant. The anomalous velocity variation has been explained as due to the presence of the large number of coarse grains of sufficient size in the sintered samples. Attenuation versus temperature plots of the samples are found to exhibit three peaks in the temperature regions 200 K, 150 K and 100 K and a suitable explanation for the observed behaviour has also been offered.

26/3,AB/14 (Item 3 from file: 34)  
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci  
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01144854 Genuine Article#: FZ641 Number of References: 93  
Title: ON THE LATTICE PROPERTIES AND ELECTRON-LATTICE INTERACTION IN HIGH-TC SUPERCONDUCTORS (Abstract Available)  
Author(s): RANNINGER J  
Corporate Source: CNRS,CTR RECH TRES TEMP,BP 166X/F-38042 GRENOBLE//FRANCE/  
Journal: ZEITSCHRIFT FUR PHYSIK B-CONDENSED MATTER, 1991, V84, N2, P167-178  
Language: ENGLISH Document Type: ARTICLE  
Abstract: The experimental results on the unusual crystalline lattice properties in high temperature superconductors are reviewed. Special attention is paid to their dependence on temperature and doping and their anomalous behaviour associated with the superconducting and metal-insulator transition. The most physically relevant features are: certain atoms fluctuating between different positions in the unit cell, unusually large oscillator strength of certain vibrational modes strongly coupled to a broad spectrum of electronic excitations and the polaronic nature of charge carriers. A synthesis of these experimental results is attempted in view of constructing a coherent picture for the metal-insulator transition and the super-conducting state. We conclude that in the insulating materials the holes are localized on the CuO<sub>2</sub> units in the immediate vicinity of the dopant ions. In the metallic materials we expect charge-fluctuations of holes between the units containing the O(4) apex ions (Cu(1)-20(4)-20(1) for YBa<sub>2</sub>Cu<sub>3</sub>O<sub>7-δ</sub>) and the Cu(2)-20(2)-20(3) complex in the CuO<sub>2</sub> layers. This charge transfer being linked to large Cu(1)-O(4) bond fluctuations ultimately leads - via a polaronic mechanism - to pairing of holes in the Cu(2)-20(2)-20(3) units.

26/3,AB/15 (Item 1 from file: 144)  
DIALOG(R)File 144:Pascal  
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15451086 PASCAL No.: 02-0143930  
Measurements of the thermal stresses in large-grain Y-Ba-Cu-O superconductors  
MIYAMOTO T; NAGASHIMA K; SAKAI N; MURAKAMI M  
Superconductivity Research Laboratory, ISTECH, 1-16-25, Shibaura, 1-chome, Minato-ku, Tokyo 105-0023, Japan  
Journal: Physica. C. Superconductivity and its applications, 2001, 349 (1-2) 69-74  
Language: English  
Large single grain Y-Ba-Cu-O superconductors have significant potential for various industrial applications. However, large-grain Y-Ba-Cu-O experiences large forces due to its relatively low thermal conductivity during thermal cycles. The thermal stress arises mainly due to a large anisotropy in thermal conductivity



02/14/2003

between ab and c axes. In this paper, we attempted to measure the thermal stresses of large-grain Y-Ba-Cu-O during the cooling process from room temperature to 100 K using the strain gauges that are directly mounted onto the sample surface. It was found that the tensile strain increased along the c axis on cooling, which should be taken into account when handling large-grain samples.

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26/3,AB/16 (Item 2 from file: 144)  
DIALOG(R)File 144:Pascal  
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14507496 PASCAL No.: 00-0170923  
Physicochemical and transport properties of BICUVOX-based ceramics  
YAREMCHENKO A A; KHARTON V V; NAUMOVICH E N; MARQUES F M B  
Institute of Physicochemical Problems, Belarus State University, 14  
Leningradskaya Str., 220080 Minsk, Belarus; Department of Ceramics and  
Glass Engineering, University of Aveiro, 3810 Aveiro, Portugal  
Journal: Journal of electroceramics, 2000, 4 (1) 233-242  
Language: English  
Polycrystalline Bi SUB 2 SUB - SUB x La SUB x V SUB 0 SUB . SUB 9 SUB 0  
Cu SUB 0 SUB . SUB 1 SUB 0 O SUB 5 SUB . SUB 5 SUB - SUB delta (x=0,  
0.10 and 0.20) and Bi SUB 1 SUB . SUB 9 SUB 0 Pr SUB 0 SUB . SUB 1 SUB 0 V  
SUB 0 SUB . SUB 9 SUB 0 Cu SUB 0 SUB . SUB 1 SUB 0 O SUB 5 SUB . SUB  
5 SUB - SUB delta were prepared by the standard ceramic synthesis  
technique. Electrical conductivity of the Bi SUB 1 SUB . SUB 9 SUB 0 La SUB  
0 SUB . SUB 1 SUB 0 V SUB 0 SUB . SUB 9 SUB 0 Cu SUB 0 SUB . SUB 1  
SUB 0 O SUB 5 SUB . SUB 5 SUB - SUB delta solid solution at temperatures  
above 500 K is lower in comparison with undoped BICUVOX.10, whereas  
transport properties of these materials at 370-450 K are close to each  
other. Doping Bi SUB 2 V SUB 0 SUB . SUB 9 SUB 0 Cu SUB 0 SUB . SUB 1  
SUB 0 O SUB 5 SUB . SUB 5 SUB - SUB delta with praseodymium was found to  
result in segregating secondary phases and decreasing conductivity and  
**thermal expansion** of the ceramics. Oxygen ion transference  
numbers of the oxides with moderate rare-earth dopant content (x < 0.10)  
vary in the range of 0.90-0.99 at 780-910 K, decreasing with increasing  
temperature. **Thermal expansion** coefficients of Bi SUB 2 SUB -  
SUB x Ln SUB x V SUB 0 SUB . SUB 9 SUB 0 Cu SUB 0 SUB . SUB 1 SUB 0 O  
SUB 5 SUB . SUB 5 SUB - SUB delta ceramics were calculated from the  
dilatometric data to be (16.1-18.0) x 10 SUP - SUP 6 K SUP - SUP 1 at  
730-1050 K.

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26/3,AB/17 (Item 3 from file: 144)  
DIALOG(R)File 144:Pascal  
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14439374 PASCAL No.: 00-0097618  
A comparative study on in situ grown superconducting YBCO and YBCO-Ag  
thin films by PLD on polycrystalline SmBa SUB 2 NbO SUB 6 substrate  
KURIAN J; JOHN A M; WARIAR P R S; SAJITH P K; KOSHY J; PAI S P; PINTO R  
Regional Research Laboratory (CSIR), Trivandrum 695 019, India; Tata  
Institute of Fundamental Research, Homi Bhabha Road, Mumbai 400005, India  
Journal: Superconductor science & technology, 2000, 13 (2) 178-182  
Language: English  
The development and characterization of SmBa SUB 2 NbO SUB 6 , which is a  
new ceramic substrate material for the YBa SUB 2 Cu SUB 3 O SUB 7 SUB  
- SUB delta superconductor, are reported. SmBa SUB 2 NbO SUB 6 has a

02/14/2003

complex cubic perovskite structure with lattice constant  $a = 8.524 \text{ \AA}$ . The dielectric properties of  $\text{SmBa SUB 2 NbO SUB 6}$  are in a range suitable for its use as a substrate for microwave applications.  $\text{SmBa SUB 2 NbO SUB 6}$  was found to have a **thermal conductivity** of  $77 \text{ W m SUP - SUP 1 K}$  SUP - SUP 1 and a **thermal expansion** coefficient of  $7.8 \times 10 \text{ SUP - SUP 6 Degree C SUP - SUP 1}$  at room temperature. Superconducting  $\text{YBa SUB 2 Cu SUB 3 O SUB 7 SUB - SUB delta}$  and  $\text{YBa SUB 2 Cu SUB 3 O SUB 7 SUB - SUB delta - Ag}$  thin films have been grown in situ on polycrystalline  $\text{SmBa SUB 2 NbO SUB 6}$  by the pulsed laser ablation technique. The films exhibited (001) orientation of an orthorhombic  $\text{YBa SUB 2 Cu SUB 3 O SUB 7 SUB - SUB delta}$  phase and gave a zero resistivity superconducting transition ( $T \text{ SUB C (0)}$ ) at 90 K with a transition width of similar 1.5 K. The critical current density of YBCO-Ag thin films grown on polycrystalline  $\text{SmBa SUB 2 NbO SUB 6}$  substrate was similar  $3 \times 10 \text{ SUP 5 A cm SUP - SUP 2}$  at 77 K. A comparative study of YBCO and YBCO-Ag thin films developed on polycrystalline  $\text{SmBa SUB 2 NbO SUB 6}$  substrate by PLD based on the crystallinity, orientation and critical current density of the YBCO film is discussed in detail.

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26/3,AB/18 (Item 4 from file: 144)  
DIALOG(R)File 144:Pascal  
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14100519 PASCAL No.: 99-0294490  
Development and characterisation of dysprosium barium niobate : a new substrate for  $\text{YBa SUB 2 Cu SUB 3 O SUB 7 SUB - SUB delta}$  and (Bi, Pb) SUB 2 Sr SUB 2 Ca SUB 2 **Cu** SUB 3 O SUB x superconductor films  
KURIAN J; PAI S P; SAJITH P K; NAIR K V O; KUMAR K S; KOSHY J  
Electronic Ceramics, Regional Research Laboratory (CSIR), Trivandrum, Kerala 695 019, India  
Journal: Physica. C. Superconductivity and its applications, 1999, 316 (1-2) 107-112  
Language: English  
Dysprosium barium niobate has been developed as a new substrate suitable for both  $\text{YBa SUB 2 Cu SUB 3 O SUB 7 SUB - SUB delta}$  (YBCO) and (Bi,Pb) SUB 2 Sr SUB 2 Ca SUB 2 **Cu** SUB 3 O SUB x (Bi(2223)) superconductor films.  $\text{DyBa SUB 2 NbO SUB 6}$  (DBNO) has a cubic perovskite ( $\text{A SUB 2 BB'O SUB 6}$ ) structure with a lattice constant  $a = 8.456 \text{ \AA}$ . DBNO was found to have a **thermal expansion** coefficient of  $7.8()6 \times 10 \text{ SUP - 6 Degree C SUP - SUP 1}$  and a **thermal conductivity** of  $67.9 \text{ W m SUP - SUP 1 K}$  The dielectric constant and loss factor values of DBNO are also in a range suitable for its use as substrate for microwave applications. Both YBCO and Bi(2223) superconductors did not show any detectable chemical reaction with DBNO even under extreme processing conditions. Dip-coated YBCO thick film on polycrystalline DBNO substrate gave a  $T \text{ SUB c (0)}$  of 92 K and  $J \text{ SUB c}$  of similar  $1.1 \times 10 \text{ SUP 4 A cm SUP - SUP 2}$ . Bi(2223) thick film dip-coated on DBNO gave  $T \text{ SUB c (0)}$  of 110 K and  $J \text{ SUB c}$  of similar  $4 \times 10 \text{ SUP 3 A cm SUP 2}$ .

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26/3,AB/19 (Item 5 from file: 144)  
DIALOG(R)File 144:Pascal  
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12960505 PASCAL No.: 97-0236559  
Specific heat and **thermal conductivity** of a single

02/14/2003

crystal-like Bi SUB 2 Sr SUB 2 CaCu SUB 2 O SUB 8 SUB + SUB x high - Tc  
superconductor

Materials. B: Superconductors

RUZHU W; JINGYI W

SUMMERS Leonard T, ed

Institute of Refrigeration and Cryogenics, Shanghai Jiao Tong University,  
Shanghai 200030, China

University of California, Lawrence Livermore National Laboratory,  
Livermore, California, United States

International Cryogenic Materials Conference (ICMC), 11 (Columbus, Ohio  
USA) 1995-07-17

Journal: Advances in cryogenic engineering, 1997, 42 (p.B) 535-541

Language: English

The characteristics of specific heat and **thermal conductivity**  
for high-Tc superconductors are discussed. In order to understand the  
behaviors of a high-Tc superconductor, a single crystal-like Bi SUB 2 Sr  
SUB 2 CaCu SUB 2 O SUB 8 SUB + SUB x is selected as the sample, and its  
specific heat is measured by adiabatic calorimeter, while its **thermal**  
**conductivity** is measured by steady heat flow method via a stainless  
steel radiation shield. The measured specific heat C of the crystal shows a  
jump at Tc with DELTA C/Cm 3.5%, while the measured **thermal**  
**conductivity** in the ab plane shows a minimum value at Tc which is  
qualitatively in good agreement with other work. The measuring skills are  
specially analyzed. In addition, the **thermal expansion**  
coefficient for the crystal-like high-Tc superconductor is also shown.

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26/3,AB/20 (Item 6 from file: 144)

DIALOG(R)File 144:Pascal

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12690008 PASCAL No.: 96-0391154

Hyperfine fields at the Ba site in YBa SUB 2 Cu SUB 4 O SUB 8 : An  
NMR and NQR study

LOMBARDI A; MALI M; ROOS J; BRINKMANN D

Physik-Institut, Universitaet Zuerich, CH-8057, Zuerich, Switzerland

Journal: Physica. C. Superconductivity, 1996, 267 (3-4) 261-269

Language: English Summary Language: English

Copyright (c) 1996 Elsevier Science B.V. All rights reserved. We report a  
nuclear quadrupole resonance (NQR) and nuclear magnetic resonance (NMR)  
study of the Ba isotopes, SUP 1 SUP 3 SUP 5 Ba and SUP 1 SUP 3 SUP 7 Ba, in  
YBa SUB 2 Cu SUB 4 O SUB 8. The Knight shift, at 298 K, is zero  
indicating that no mobile charge carriers are present at the Ba site. The  
temperature (T) dependence of nu SUB Q, which is caused by **thermal**  
**expansion**, can be described by a power law. The electric field  
gradient tensor at the Ba site is in good agreement with band structure  
calculations. The spin-spin relaxation rate is nearly constant between 56  
and 400 K. The spin-lattice relaxation mechanism is of quadrupolar origin  
and its T dependence can be described perfectly by a two-phonon Raman  
process with a Debye temperature of 185(20) K, which agrees with the  
**thermal conductivity** result. Thus, the Ba site in YBa SUB 2  
Cu SUB 4 O SUB 8 does not sense the spin fluctuations of the CuO SUB  
2 plane.

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26/3,AB/21 (Item 7 from file: 144)

DIALOG(R)File 144:Pascal

02/14/2003

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07090940 PASCAL No.: 86-0250544

Kupfer-Keramik-Verbindungen fuer die Leistungselektronik (Direct Bonding)  
(**Copper**-ceramic compounds for power electronics (Direct Bonding))

MUEHLTHALER U; SCHULER P

Duerrwaechter (E.) Doduco K.G., Pforzheim, Federal Republic of Germany

Journal: Prakt. Metallogr., 1986-02, 23 (2) 63-70

Language: German

26/3,AB/22 (Item 1 from file: 103)

DIALOG(R)File 103:Energy SciTec

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03808171 ECN-95-0E0443; EDB-95-051939

Title: Interfaces in ceramic substrates

Author(s): Niwa, Koichi (Fujitsu Laboratories Ltd., Morinosato-Wakamiya  
Astugi (Japan))

Title: Science of ceramic interfaces: Part 2

Author(s)/Editor(s): Nowotny, J. (ed.) (Lucas Heights Research  
Laboratories, Advanced Materials Program, Australian Nuclear Science  
and Technology Organization, Menai, NSW (Australia))

Original Series Title: Materials Science Monographs, v. 81

Corporate Source: No corporate text available

Conference Title: International workshop on interfaces of ceramic materials

Conference Location: Lucas Heights (Australia) Conference Date: 1-5 Feb  
1993

Publisher: Amsterdam (Netherlands) Elsevier Science Publishers

Publication Date: 1994

p 341-351 (705 p)

Report Number(s): CONF-9302205--

ISBN: 0-444-81666-6

Language: English

Abstract: Three interfaces in ceramic substrates for electronic applications are reviewed. The substrates discussed here are aluminum nitride AlN, glass/ceramic composite and magnesia. Calcium added AlN shows very tight and highly purified grain boundaries after 2000C firing. The lattice constant of AlN changed by diffusion of oxygen in AlN lattice. This decreases the **thermal conductivity**. Alumina dispersed in B[sub 2]O[sub 3]-SiO[sub 2] glass react with silica chain structure which prevent crystallization of glass/ceramic composite. This causes a steep change in **thermal expansion** curve. Bi-Sr-Ca-Cu-O compound has been deposited on MgO single crystal. The Bi superconducting film grows with c-axis perpendicular and parallel to MgO surface. 12 figs., 9 refs.

26/3,AB/23 (Item 2 from file: 103)

DIALOG(R)File 103:Energy SciTec

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03800956 DEN-95-0F3579; EDB-95-044724

Title: Structural relaxation in Y-Ba-Cu-O ceramic in the  
temperature range from Tc to 300 K

Author(s): Sobolev, V.P. (Moscow Engineering Physics Inst. (Russian  
Federation)); Kruglov, A.B. (Moscow Engineering Physics Inst. (Russian  
Federation))

Title: Applied superconductivity. Vol. 1

Author(s)/Editor(s): Freyhardt, H.C. (ed.)

Corporate Source: No corporate text available

02/14/2003

Conference Title: European conference on applied superconductivity  
Conference Location: Goettingen (Germany) Conference Date: 4-8 Oct 1993  
Publisher: Oberursel (Germany) DGM Informationsges. Verl  
Publication Date: 1993  
p 65-68 (876 p)  
Report Number(s): CONF-931034--  
ISBN: 3-88355-197-X  
Language: English

Abstract: A valuable information on high temperature superconductors (HTSC) may be received from both superconducting and nonsuperconducting states researches. Experimental investigations of HTSC properties showed a number of anomalies below room temperature, particularly in the temperature range of Tc-280 K. Sometimes the HTSC data scatter largely at these temperatures. Some of the properties - **thermal conductivity, thermal expansion**, acoustic constants, revealed a hysteresis behaviour related usually to structural transitions into the spinodal decomposition region of Y-Ba-Cu-O. Otherwise, it is known that experiments on **thermal conductivity** of solids may be useful and powerful tools for structure relaxation studies, because of their sensitivity to modifications in the micro- and macrostructure of materials. However, there was a little of information on the HTSC materials **thermal conductivity** till now. In the work presented we report the results of experimental studies on the temperature variation of the **thermal conductivity** coefficient for two Y-Ba-Cu-O superconducting ceramic samples. The results received show more significant hysteresis in the temperature range from 80 K to 300 K compared with data of Jezowski et al, but it was weaker than indicated recently by Terzijska et al. (orig.)

26/3,AB/24 (Item 3 from file: 103)  
DIALOG(R)File 103:Energy SciTec  
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03745628 EDB-94-161594

Title: High-frequency acoustic sensors for operation in a gaseous medium  
Author(s)/Editor(s): Kino, G.S.  
Corporate Source: Stanford Univ., CA (United States). Edward L. Ginzton Lab.  
Sponsoring Organization: DOE; USDOE, Washington, DC (United States)  
Publication Date: [1990]  
(133 p)  
Report Number(s): DOE/ER/13797-T1 GL--4979  
Order Number: DE95002123  
Contract Number (DOE): FG03-87ER13797  
Language: English

Abstract: Photothermal microscopy is a technique for measuring thermal properties on a small scale by using focused laser beams as heat sources and as temperature probes. Typically used for nondestructive evaluation (NDE) of materials, its main advantage is its ability to measure types of flaws that are not visible optically or acoustically. Because of the optical nature of photothermal microscopy, sub-micron resolutions can be obtained in many of these thermal measurements. The greatest limitation of these systems is their relatively poor signal-to-noise ratios and, consequently, slow imaging speeds. To circumvent this problem, a variety of approaches to the detection of thermal waves has been pursued in recent years. This thesis compares the relative merits of a common class of techniques that rely on direct observation of physical changes in the heated sample, including a novel approach to interferometric measurement of the **thermal**

02/14/2003

**expansion.** It is found that the optimum approach depends not only on the physical properties of the sample being studied, but also upon the resolution of the experiment and the damage threshold of the specimen. Finally, this dissertation describes the applications of photothermal microscopy to the study of the anisotropic thermal properties of the new high- $T_c$  superconductors. By adding a high-vacuum cryostat to the microscope, the authors have been able to study the influence of the superconducting transition on the **thermal conductivity**. The measurements of the anisotropic **thermal conductivity** demonstrate that the heat flow along the superconducting planes is enhanced below the transition, and that no such enhancement exists in the non-superconducting direction. Material examined was Bi-Ca-Sr-Cu-O.

02/14/2003

29/3,AB/1 (Item 1 from file: 8)  
DIALOG(R)File 8:Ei Compendex(R)  
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04475987

E.I. No: EIP96083294425  
Title: Synthesis of **SnO//2** particle dispersed **Ag** alloy by mechanical alloying  
Author: Lee, Gil Geun; Ohhira, Toshiyuki; Hoshino, Koji; Kohno, Tohru; Yamagishi, Nobuyuki  
Corporate Source: Mitsubishi Materials Corp, Omiya, Jpn  
Source: Funtai Oyobi Fummatsu Yakin/Journal of the Japan Society of Powder and Powder Metallurgy v 43 n 6 Jun 1996. p 795-800  
Publication Year: 1996  
CODEN: FOFUA2 ISSN: 0532-8799  
Language: Japanese

Abstract: To prepare a **SnO//2** particle dispersed nano structured **silver** alloy by mechanical alloying process, the mixtures of **SnO//2** and **silver** powder were tumbler-ball milled in the air atmosphere, using ethanol as a milling surfactant. The milling process and phase formation were monitored by X-ray diffraction analysis (XRD), optical microscopy, SEM, EPMA and TEM of the milled powder. The milled powders were consolidated by conventional sintering process and extrusion process. The microstructure of the consolidated compacts was observed by optical microscopy and TEM. Fine **SnO//2/silver** composite powder particle with a microstructure of nano size **SnO//2** particles were homogeneously dispersed throughout the **silver** matrix, was formed after 100 h milling, in spite of milled in the air atmosphere. It was difficult to obtain dense and homogeneous nano structured **SnO//2/silver** consolidated compact by conventional sintering process, because phase separation between dispersion phase, **SnO//2**, and matrix phase, **silver**, during sintering of the composite powder particles milled over 50 h milling time. It was possible to obtain dense and homogeneous ultra-fine microstructured **SnO//2/silver** alloy by combination of mechanical alloying and extrusion process which occurs severe mass transfer during consolidation. (Author abstract) 10 Refs.

29/3,AB/2 (Item 1 from file: 94)  
DIALOG(R)File 94:JICST-EPlus  
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01687774 JICST ACCESSION NUMBER: 93A0039297 FILE SEGMENT: JICST-E  
Science and Technology in **Composite Materials. Sintering**  
of **Silver**-Glass Thick Films.  
IMAI HIROYUKI (1); YAMAGUCHI TAKASHI (2)  
(1) Mitsubishi Materials; (2) Keio Univ., Faculty of Science and Technology  
Seramikkusu(Ceramics Japan), 1992, VOL.27,NO.11, PAGE.1092-1099, FIG.11,  
REF.6  
JOURNAL NUMBER: S0291AAW ISSN NO: 0009-031X CODEN: SERAA  
UNIVERSAL DECIMAL CLASSIFICATION: 621.315.5  
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan  
DOCUMENT TYPE: Journal  
ARTICLE TYPE: Commentary  
MEDIA TYPE: Printed Publication

29/3,AB/3 (Item 1 from file: 144)  
DIALOG(R)File 144:Pascal  
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02/14/2003

13728791 PASCAL No.: 98-0420482

Rotation-coalescence of confined particles in Ni SUB 1 SUB - SUB x O/NiAl  
SUB 2 O SUB 4 composites

WANG S R; SHEN P

Institute of Materials Science and Engineering, National Sun Yat-sen  
University, Kaohsiung, Taiwan

Journal: Materials science & engineering. A, Structural materials :  
properties, microstructure and processing, 1998, 251 (1-2) 106-112

Language: English

The Ni SUB 1 SUB - SUB x O/NiAl SUB 2 O SUB 4 powders of specified molar  
ratios (1:9, 32:1, 69:1, designated as N SUB 1 S SUB 9 , N SUB 3 SUB 2 S  
SUB 1 , N SUB 6 SUB 9 S SUB 1 ) were sintered and annealed at 1873 K for  
1-80 h and studied by transmission electron microscopy with regard to the  
orientation change of the intragranular particles. It was found that the N  
SUB 1 S SUB 9 and N SUB 3 SUB 2 S SUB 1 specimens contains only  
intergranular particles; whereas the N SUB 6 SUB 9 S SUB 1 specimen  
contains both inter- and intragranular particles in the late stage of  
sintering. In N SUB 6 SUB 9 S SUB 1 specimen, the intergranular spinel  
particles, either isolated or slightly coalesced as sausage-like chains,  
were able to detach from the Ni SUB 1 SUB x O grain boundaries and became  
parallel-epitaxial with respect to the host Ni SUB 1 SUB - SUB x O grains  
upon annealing. The orientation change can be ascribed to Brownian rotation  
and coalescence of the particles, and the rotation of the particles mostly  
proceeds over non-specific contact planes due to the dragging effect in the  
coalescence process. The epitaxial spinel particles could possibly be  
preserved in the Ni SUB 1 SUB x O grains when the intergranular particles  
were coalesced to a larger size to suppress grain boundary separation.

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29/3,AB/4 (Item 2 from file: 144)

DIALOG(R)File 144:Pascal

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13664921 PASCAL No.: 98-0372661

Effect of interfacial reactions of oxide particle-reinforced  
nickel-matrix composites on thermally induced strains

DRIRA-HALOUANI R; DURAND L; LAVELLE B

ENSC/INPT, 118, Route de Narbonne, 31077 Toulouse, France; CEMES, 29, Rue  
Jeanne Marriq, 31055 Toulouse, France

Journal: Materials science & engineering. A, Structural materials :  
properties, microstructure and processing, 1998, 252 (1) 144-148

Language: English

Composites were obtained by hot pressing a mixture of pure nickel and  
alumina (Al SUB 2 O SUB 3 ) or silica (SiO SUB 2 ) powders in a  
graphite mould at 1400 Degree C. During sintering, **nickel oxide**  
surrounding the grains of nickel powder reacts with silica or alumina under  
reducing atmosphere. In the case of alumina, this reactivity indicates a  
eutectoidal decomposition, while, in the case of silica, an olivine type  
silicate layer remains at the interface nickel/silica. Average residual  
strains of the nickel matrix are measured between room temperature and 240  
Degree C by X-ray diffraction. We have extended the results of Lee about a  
single particle embedded in an infinite matrix in order to take into  
account the interaction of two neighbouring particles. We compare the  
experimental results with our calculations and conclude that the way nickel  
and ceramics are bound across the interface is important for the mechanical  
state of these materials.



02/14/2003

34/3,AB/1 (Item 1 from file: 2)  
DIALOG(R)File 2:INSPEC  
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5957237 INSPEC Abstract Number: A9815-8140N-063

Title: Microstructure and mechanical properties of **Al/sub 2/O/sub 3//Cu-O** composites fabricated by pressureless infiltration technique

Author(s): Travitzky, N.A.; Shlayan, A.  
Author Affiliation: Fac. of Eng., Tel Aviv Univ., Israel  
Journal: Materials Science & Engineering A (Structural Materials: Properties, Microstructure and Processing) vol.A244, no.2 p.154-60  
Publisher: Elsevier,  
Publication Date: 15 April 1998 Country of Publication: Switzerland  
CODEN: MSAPE3 ISSN: 0921-5093  
SICI: 0921-5093(19980415)A244:2L.154:MMPA;1-O  
Material Identity Number: M711-98008  
U.S. Copyright Clearance Center Code: 0921-5093/98/\$19.00  
Language: English

Abstract: **Al/sub 2/O/sub 3//Cu-O** composites were fabricated using pressureless infiltration of a **copper**-oxygen alloy into alumina preforms containing different volume fraction of open porosity. Pressureless infiltration of all alumina preforms was obtained for **copper**-oxygen alloy containing 3.2 wt% of oxygen. **Al/sub 2/O/sub 3//Cu-O** composites exhibit high strength and fracture toughness, e.g.  $K_{Ic}$  about 8.4 MPa m<sup>1/2</sup> for samples containing approximately 29 vol% of metal phase. SEM micrographs of fractured surfaces showed deformed metal ligaments which demonstrated that crack bridging by **plastic** deformation of the metal phase is one of the toughening mechanisms for **Al/sub 2/O/sub 3//Cu-O** composites. XRD analysis showed the presence of alpha -**Al/sub 2/O/sub 3**, **Cu** and **Cu/sub 2/O** only.

Subfile: A

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34/3,AB/2 (Item 1 from file: 94)  
DIALOG(R)File 94:JICST-EPlus  
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05220495 JICST ACCESSION NUMBER: 02A0653432 FILE SEGMENT: JICST-E  
Composite Resin with Polymethyl Methacrylate Using the Spontaneous

Polymerization Activity of Superconductor.

TATSUMI MASAKAZU (1); MIKI AKIKO (1); YANO MASAFUMI (1)

(1) Kansai Univ., Faculty of Engineering, JPN

Nippon Fukugo Zairyo Gakkaishi(Journal of the Japan Society for Composite Materials), 2002, VOL.28,NO.4, PAGE.140-145, FIG.8, REF.15

JOURNAL NUMBER: S0977AAT ISSN NO: 0385-2563

UNIVERSAL DECIMAL CLASSIFICATION: 542.952.6:544.478.1 678.046  
537.312.62:546-31

LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan

DOCUMENT TYPE: Journal

ARTICLE TYPE: Original paper

MEDIA TYPE: Printed Publication

ABSTRACT: In this report the spontaneous polymerization of vinyl monomer using the superconductor YBa<sub>2</sub> Cu<sub>3</sub>O<sub>7- $\delta$</sub>  was studied. It is known that superconducting characters of this material is influenced by conditions of oxidation in the synthetic process. Although the superconductivity transition temperature, T<sub>c</sub> of fully oxidized YBa<sub>2</sub>Cu<sub>3</sub>O<sub>7</sub> (Y7) is about 90K, this material is transferred to a

02/14/2003

semiconductor YBa<sub>2</sub>Cu<sub>3</sub>O<sub>6</sub> (Y6) with tetragonal structure upon reduction at high temperature and under low oxygen pressure. The Y7 could be dispersed in the polymerization of methyl methacrylate (MMA), but not for the Y6. Thus the PMMA with the powder of Y7 was composed. The process of the polymerization is the free radical chain reaction. The composite resin itself is an insulator, but the T<sub>c</sub> is observed by the measurement of alternating current susceptibility. The T<sub>c</sub> of the superconductor in the matrix resin is almost similar to that of as-sintered. The superconductor in the composite resin has water proofness and thermostability. (author abst.)

34/3,AB/3 (Item 2 from file: 94)  
DIALOG(R)File 94:JICST-EPlus  
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04407390 JICST ACCESSION NUMBER: 99A0945794 FILE SEGMENT: JICST-E  
Properties of Al-Pb and Al-Sn alloys processed by mechanical alloying.  
KAMEI REI (1); KANEKO JUN'ICHI (1); SUGAMATA MAKOTO (1); OKUBO MICHINORI (1)  
(1) Nihon Univ.  
Keikinzoku Gakkai Taikai Koen Gaiyo, 1998, VOL.95th, PAGE.207-208, FIG.4, TBL.2  
JOURNAL NUMBER: Y0775AAX  
UNIVERSAL DECIMAL CLASSIFICATION: 621.767 669.017:539.4.01  
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan  
DOCUMENT TYPE: Conference Proceeding  
ARTICLE TYPE: Short Communication  
MEDIA TYPE: Printed Publication

34/3,AB/4 (Item 3 from file: 94)  
DIALOG(R)File 94:JICST-EPlus  
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03713950 JICST ACCESSION NUMBER: 98A0659016 FILE SEGMENT: JICST-E  
Oxide dispersed material by solid phase reaction of Al and Al alloy with added oxide.  
KANEKO JUN'ICHI (1); SUGAMATA MAKOTO (1); KIN TOKUKEI (1); HIGUCHI HIROYUKI (1)  
(1) Nihon Univ., Coll. of Ind. Technol.  
Mekanikaru Airongu to Shigen Enerugi Kanren Zairyo ni Kansuru Shinpojiumu, 1998, PAGE.1-17, FIG.30, REF.13  
JOURNAL NUMBER: M19980014U  
UNIVERSAL DECIMAL CLASSIFICATION: 621.762.3/.8 669-492  
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan  
DOCUMENT TYPE: Conference Proceeding  
ARTICLE TYPE: Original paper  
MEDIA TYPE: Printed Publication

34/3,AB/5 (Item 4 from file: 94)  
DIALOG(R)File 94:JICST-EPlus  
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03543508 JICST ACCESSION NUMBER: 98A0361955 FILE SEGMENT: JICST-E  
Magnetization Properties of YBaCuO Ceramics Superconducting Tapes by Pressing Process.  
YOKOCHI YUMIO (1); MASUDA YOICHIRO (1); TOGASAWA AKIRA (1)  
(1) Hachinohe Inst. of Technol., Fac. of Eng.

02/14/2003

Hachinohe Kogyo Daigaku Kiyo(Bulletin of Hachinohe Institute of Technology)  
, 1998, VOL.17, PAGE.95-99, FIG.9, REF.7

JOURNAL NUMBER: Y0587AAM ISSN NO: 0287-1866

UNIVERSAL DECIMAL CLASSIFICATION: 537.312.62:621.315.55

LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan

DOCUMENT TYPE: Journal

ARTICLE TYPE: Original paper

MEDIA TYPE: Printed Publication

ABSTRACT: A number of fundamental and theoretical studies were performed extensively on oxide superconducting materials with high T<sub>c</sub>. Power electronics is one of the most important fields of application of the superconducting materials and special attention was paid to developing and establishing a method to obtain superconducting wires or tapes with high current density. This paper describes the superconducting properties of **Ag** added Y-Ba-Cu-O tapes. Y-Ba-Cu-O superconducting powder was mixed with **Ag** powder and pressed on to an **Ag** substrata to form a tape and **sintered**. In this case, thermal stress generated cracks which deteriorated the superconducting properties. In order to suppress the generation of cracks, conditions of heattreatment and formation process were investigated in detail. As a result, crack-free superconducting tapes with magnetization intensity of M= -2.6emu/g, low critical field H<sub>c1</sub>=1430e, and critical current density J<sub>c</sub>=13.5\*103A/cm<sup>2</sup> were obtained. (author abst.)

34/3,AB/6 (Item 5 from file: 94)

DIALOG(R)File 94:JICST-EPlus

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03376733 JICST ACCESSION NUMBER: 97A0496352 FILE SEGMENT: JICST-E  
Fine structures of high-strength and high-functional materials and evaluation of their characteristics. II. (Science and Technology Agency S).

YAMAGUCHI YOSHIO (1); NOGUCHI TOORU (1); HAYASHI SHIGEHICO (1)

(1) Mitsuboshi Bel. Ltd.

Seikatsu, Chiiki Ryudo Kenkyu Seika Hokokusho. Heisei 7 Nendo. Kagaku Gijutsucho Itaku Chosa Kenkyu Hokokusho, 1996, PAGE.194-198, FIG.6, TBL.1, REF.3

JOURNAL NUMBER: N199710880

UNIVERSAL DECIMAL CLASSIFICATION: 539.23:621.315.592

LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan

DOCUMENT TYPE: Journal

ARTICLE TYPE: Short Communication

MEDIA TYPE: Printed Publication

ABSTRACT: By reacting the **Cu2O** fine particle-nylon **composite material** (**Cu2O-MPPC**) prepared by the RAD process with metals and ceramics at low temperature, the reactivity of **Cu2O** fine particle in **Cu2O-MPPC** was confirmed. The following facts were found : It has a high reactivity similar to usual fine particles ; **Cu** is **sintered** at 800.DEG.C. to form a film ; a reaction layer (CuAlO<sub>2</sub>,CuAl<sub>2</sub>O<sub>4</sub>) is generated in the interface with ceramic ; the film is attached on the substrate firmly.

34/3,AB/7 (Item 6 from file: 94)

DIALOG(R)File 94:JICST-EPlus

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02763024 JICST ACCESSION NUMBER: 96A0587248 FILE SEGMENT: JICST-E  
Synthesis of SnO<sub>2</sub> Particle Dispersed **Ag** Alloy by Mechanical Alloying.

02/14/2003

LEE G G (1); OHIRA TOSHIYUKI (1); HOSHINO KOJI (1); KONO TOORU (1);  
YAMAGISHI NOBUYUKI (2)

(1) Mitsubishimateriaru Soken; (2) Higashi Fuji Seisakusho  
Funtai oyobi Funmatsu Yakin(Journal of the Japan Society of Powder and  
Powder Metallurgy), 1996, VOL.43,NO.6, PAGE.795-800, FIG.9, REF.10

JOURNAL NUMBER: F0691AAD ISSN NO: 0532-8799 CODEN: FOFUA

UNIVERSAL DECIMAL CLASSIFICATION: 621.762.2 669-492

LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan

DOCUMENT TYPE: Journal

ARTICLE TYPE: Original paper

MEDIA TYPE: Printed Publication

ABSTRACT: To prepare a SnO<sub>2</sub> particle dispersed nano structured **silver** alloy by mechanical alloying process, the mixtures of SnO<sub>2</sub> and **silver** powder were tumbler-ball milled in the air atmosphere, using ethanol as a milling surfactant. The milling process and phase formation were monitored by X-ray diffraction analysis(XRD), optical microscopy, SEM, EPMA and TEM of the milled powder. The milled powders were consolidated by conventional **sintering** process and extrusion process. The microstructure of the consolidated compacts was observed by optical microscopy and TEM. Fine SnO<sub>2</sub>/**silver** composite powder particle with a microstructure of nano size SnO<sub>2</sub> particles were homogeneously dispersed throughout the **silver** matrix, was formed after 100h milling, in spite of milled in the air atmosphere. It was difficult to obtain dense and homogeneous nano structured SnO<sub>2</sub>/**silver** consolidated compact by conventional **sintering** process, because phase separation between dispersion phase, SnO<sub>2</sub>, and matrix phase, **silver**, during **sintering** of the composite powder particles milled over 50h milling time. It was possible to obtain dense and homogeneous ultra-fine microstructured SnO<sub>2</sub>/**silver** alloy by combination of mechanical alloying and extrusion process which occurs severe mass transfer during consolidation. (author abst.)

34/3,AB/8 (Item 7 from file: 94)

DIALOG(R)File 94:JICST-EPlus

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02685844 JICST ACCESSION NUMBER: 96A0034143 FILE SEGMENT: JICST-E  
Properties of P/M materials of **Al**-Li-metal oxide alloys processed by  
mechanical alloying.

HIGUCHI HIROYUKI (1); SUGAMATA MAKOTO (2); KANEKO JUN'ICHI (2)

(1) Nihon Univ., Grad. Div.; (2) Nihon Univ.

Keikinzoku Gakkai Taikai Koen Gaiyo, 1995, VOL.89th, PAGE.191-192, FIG.5,  
TBL.1

JOURNAL NUMBER: Y0775AAX

UNIVERSAL DECIMAL CLASSIFICATION: 621.767 669.017:539.4.01

LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan

DOCUMENT TYPE: Conference Proceeding

ARTICLE TYPE: Short Communication

MEDIA TYPE: Printed Publication

34/3,AB/9 (Item 8 from file: 94)

DIALOG(R)File 94:JICST-EPlus

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02245496 JICST ACCESSION NUMBER: 94A0981275 FILE SEGMENT: JICST-E  
Preferential oxidation of magnesium in **Al**-Mg alloys by mechanical  
alloying.

KANEKO JUN'ICHI (1); SUGAMATA MAKOTO (1); KIM D G (1)

02/14/2003

(1) Nihon Univ.  
Keikinzoku Gakkai Taikai Koen Gaiyo, 1994, VOL.87th, PAGE.91-92, FIG.5,  
REF.2  
JOURNAL NUMBER: Y0775AAX  
UNIVERSAL DECIMAL CLASSIFICATION: 621.762.2 669-492  
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan  
DOCUMENT TYPE: Conference Proceeding  
ARTICLE TYPE: Short Communication  
MEDIA TYPE: Printed Publication

34/3,AB/10 (Item 9 from file: 94)  
DIALOG(R)File 94:JICST-EPlus  
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01795012 JICST ACCESSION NUMBER: 93A0591278 FILE SEGMENT: JICST-E  
Structures and Properties of Mechanically Alloyed **Aluminum**-Metal  
Oxide Powders and Their P/M Materials.  
KANEKO JUN'ICHI (1); SUGAMATA MAKOTO (1)  
(1) Nihon Univ., College of Industrial Technology  
Nippon Kinzoku Gakkaishi(Journal of the Japan Institute of Metals), 1993,  
VOL.57,NO.6, PAGE.679-685, FIG.27, REF.9  
JOURNAL NUMBER: G0023AAV ISSN NO: 0021-4876 CODEN: NIKGA  
UNIVERSAL DECIMAL CLASSIFICATION: 669.017:539.4.01 621.767  
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan  
DOCUMENT TYPE: Journal  
ARTICLE TYPE: Original paper  
MEDIA TYPE: Printed Publication  
ABSTRACT: Powders of metal oxides of different standard free energies of  
formation, CuO, Fe<sub>2</sub>O<sub>3</sub>, SiO<sub>2</sub> and MgO, were mechanically alloyed with  
pure **aluminum** powder by a high energy ball mill under an argon  
atmosphere. P/M materials were fabricated from mechanically alloyed  
powders by cold pressing, vacuum degassing and hot extrusion. The solid  
state reaction of **aluminum**-oxide systems was studied by DSC  
analysis and X-ray diffraction. Thermit reaction occurs in **Al**-CuO  
and **Al**-Fe<sub>2</sub>O<sub>3</sub> systems during mechanical alloying and hot  
extrusion, respectively. In the case of SiO<sub>2</sub> and MgO which have a  
relatively high standard free energy of formation, no reaction with  
**aluminum** occurs even after heating of P/M materials at 873 K for  
24h. It is shown by X-ray diffraction and DSC analysis that the  
**Al**-CuO system P/M material consists essentially of the **Al**-  
**Cu** alloy matrix with dispersion of Al<sub>2</sub>O<sub>3</sub>. The hardness increase  
by age hardening for **Al**-CuO P/M material after solutionizing and  
water-quenching is about half as much as that of I/M **Al**-**Cu**  
alloys. The P/M material of the **Al**-CuO system shows the highest  
tensile strength of 600 MPa at room temperature, whereas that of the  
**Al**-Fe<sub>2</sub>O<sub>3</sub> system has the highest tensile strength of 330 MPa at  
573 K. (author abst.)

34/3,AB/11 (Item 10 from file: 94)  
DIALOG(R)File 94:JICST-EPlus  
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00682375 JICST ACCESSION NUMBER: 88A0517120 FILE SEGMENT: JICST-E  
**Sinter** forging for dispersion strengthened **copper** alloy powder.  
HAMAMOTO HIROSHI (1); KONDO MIKIO (1); KOBAYASHI TAKAO (1); ITO KAZUHIKO  
(1); NISHINO KAZUAKI (1)  
(1) Toyota Central Res. and Development Labs., Inc.  
Funtai Funmatsu Yakin Kyokai Koen Gaiyoshu, 1988, VOL.1988,shunki,  
PAGE.150-151, FIG.4, REF.4

02/14/2003

JOURNAL NUMBER: F0815BAE  
UNIVERSAL DECIMAL CLASSIFICATION: 621.762.3/.8 669-492  
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan  
DOCUMENT TYPE: Conference Proceeding  
ARTICLE TYPE: Short Communication  
MEDIA TYPE: Printed Publication

34/3,AB/12 (Item 1 from file: 144)  
DIALOG(R)File 144:Pascal  
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14590282 PASCAL No.: 00-0258011

The microstructure and wear resistance characteristics of electroformed nickel and partially stabilized zirconia composite coatings

LI JUN; WU YIYONG; WANG DIANLONG; HU XINGUO

New Material Department, Central Iron and Steel Research Institute, Beijing, 100081, China; Applied Chemistry Department, Harbin Institute of Technology, Harbin, 150001, China

Journal: Journal of materials science, 2000, 35 (7) 1751-1758

Language: English

Ni-PSZ composite coatings with various PSZ particle content were prepared by the electroforming technique. The microstructure and surface components of the coatings have been examined by optical microscopy, electron microscopy and X-ray photoelectron spectroscopy analysis and the wear properties of the coatings tested on a reciprocating wear test machine. The results show that the PSZ particles are uniformly dispersed in the coatings and thus increase the wear resistance of the coatings by inhibiting **plastic** deformation of the nickel matrix. The co-deposition of the PSZ particles in the electrolyte is mainly in the form of agglomeration and is accompanied by the incorporation of Ni(OH) SUB 2 . When the PSZ content in a coating is higher than a critical value, the wear resistance of the coating could deteriorate because of the decrease in the integrity of the nickel matrix. After heat-treatment at high temperature, Ni(OH) SUB 2 in the coating is turned into Ni SUB 2 O SUB 3 and **NiO** which can wet the PSZ particles and increase the bonding strength between the PSZ and nickel. In addition, the agglomerated PSZ particles are **sintered** when heat-treated. These are all beneficial to increasing the wear resistance of the coating.

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34/3,AB/13 (Item 2 from file: 144)  
DIALOG(R)File 144:Pascal  
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13244162 PASCAL No.: 97-0513936

Fabrication and properties of YBa SUB 2 Cu SUB 3 O SUB 7 SUB - SUB delta SUB -**Ag** composite superconducting wires by **plastic** extrusion technique

KIM C J; KIM K B; KUK I H; HONG G W; PARK S D; YANG S W; SHIN H S

Superconductivity Research Laboratory, Korea Atomic Energy Research Institute, P.O. Box 105, Yusung, Taejon, 305-600, Korea, Republic of; Department of Chemical Engineering, Chonbuk National University, Chunju, Chonbuk, 560-756, Korea, Republic of

Journal: Journal of materials science, 1997, 32 (19) 5233-5242

Language: English

YBa SUB 2 Cu SUB 3 O SUB 7 SUB - SUB delta (Y123)-**Ag** composite superconducting wires were fabricated by the **plastic** extrusion method which involves **plastic** paste making, die extrusion,

02/14/2003

binder burn-out and the firing process. The as-extruded Y123-Ag wires were so flexible that they can be easily fabricated into a desirable shape. The current-carrying properties of the wire are dependent on sample size, sintering temperature and silver content. The critical current density,  $J_{SUB c}$ , of the Y123 wire with a large cross-section was lower than that of the wires with a small cross-section, probably due to the large self-induced magnetic field.  $J_{SUB c}$  of the Y123-Ag wires increased with increasing sintering temperature but abruptly decreased above 910 Degree C, which is close to the eutectic temperature of the Y-Ba-Cu-O system. A silver addition of 10-20wt% slightly increased  $J_{SUB c}$  of the Y123 (at 77 K and 0 T, it was 140 and 250 A cm SUP - SUP 2 for the undoped Y123 wire and the Y123 wire with 20 wt% Ag addition, respectively), but further silver addition had a deleterious effect on  $J_{SUB c}$  (180 A cm SUP - SUP 2 for 30wt% Ag addition). The small increment in  $J_{SUB c}$  in the Y123 wire with 10-20wt% Ag addition appears to be due to the enhanced densification and the associated microstructural variation. The decreased  $J_{SUB c}$  of the Y123 wire with 30 wt% Ag addition is considered to be due to the formation of non-superconducting phase, Y SUB 2 BaCuO SUB 5 (Y211), BaCuO SUB 2 and CuO phases via the decomposition of the Y123 phase.

02/14/2003

41/3,AB/1 (Item 1 from file: 34)  
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci  
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01413084 Genuine Article#: GW830 Number of References: 6  
Title: THEORY OF POSITIVE MUON SPIN ROTATION IN LA2CUO4 (Abstract Available)  
Author(s): **SAITO R**; KAMIMURA H; NAGAMINE K  
Corporate Source: UNIV TOKYO,FAC SCI,MESON SCI LAB,BUNKYO KU/TOKYO 113//JAPAN/  
Journal: PHYSICA C, 1991, V185, DEC (DEC 1), P1217-1218  
Language: ENGLISH Document Type: ARTICLE  
Abstract: Crystal potential of La2CuO4 for a positive muon is calculated by adding the atomic potentials of La, **Cu** and O atoms which are calculated by spin-dependent self-consistent atomic Shrodinger equation. We have found that the stable site for a positive muon is located in the interlayer region between two **Cu-O** planes. Dipolar field and hyperfine field of **Cu** and O spin are calculated at the muon sites. The calculated result shows that the hyperfine field from spin-polarized apical oxygen does contribute to the local field at the muon site and that the contact interaction of a positive muon is sensitive to the muon site and 2p orbital of apical oxygen.

41/3,AB/2 (Item 1 from file: 434)  
DIALOG(R)File 434:SciSearch(R) Cited Ref Sci  
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08838282 Genuine Article#: N6092 Number of References: 12  
Title: LSD CALCULATION OF ELECTRONIC-STRUCTURE OF HIGH-TC SUPERCONDUCTOR - LA-SR-**CU-O** SYSTEMS  
Author(s): SIRAISHI K; OSHIYAMA A; SHIMA N; NAKAYAMA T; **SAITO R**; KAMIMURA H  
Corporate Source: UNIV TOKYO,FAC SCI,DEPT PHYS,BUNKYO KU/TOKYO 113//JAPAN/; NEC CORP,FUNDAMENTAL RES LABS,MIYAMAE KU/KAWASAKI/KANAGAWA 213/JAPAN/; CHIBA UNIV,FAC SCI,DEPT PHYS/CHIBA 280//JAPAN/  
Journal: JAPANESE JOURNAL OF APPLIED PHYSICS PART 1-REGULAR PAPERS & SHORT NOTES, 1987, V26, S26-3, P983-984  
Language: ENGLISH Document Type: ARTICLE

41/3,AB/3 (Item 2 from file: 434)  
DIALOG(R)File 434:SciSearch(R) Cited Ref Sci  
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07877889 Genuine Article#: F8959 Number of References: 7  
Title: A THERMODYNAMIC STUDY OF **CU2O**-CAO MELTS IN EQUILIBRIUM WITH LIQUID **COPPER**  
Author(s): OISHI T; **KONDO Y**; ONO K  
Corporate Source: KYOTO UNIV,DEPT MET,SAKYO KU/KYOTO 606//JAPAN/  
Journal: TRANSACTIONS OF THE JAPAN INSTITUTE OF METALS, 1986, V27, N12, P 976-980  
Language: ENGLISH Document Type: ARTICLE

41/3,AB/4 (Item 1 from file: 94)  
DIALOG(R)File 94:JICST-EPlus  
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02387744 JICST ACCESSION NUMBER: 95A0636094 FILE SEGMENT: JICST-E



02/14/2003

Nonlinear Optical Property of **Cu2O** Microcrystallite-doped Glass

Prepared by Ion-exchange Method.

SUGIMOTO N (1); **KONDO Y** (1); MANABE T (1); ITO S (1)

(1) Asahi Glass Co., Ltd.

Asahi Garasu Kenkyu Hokoku(Reports of the Research Laboratory, Asahi Glass

Co., Ltd), 1994, VOL.44,NO.1/2, PAGE.1-11, FIG.11, TBL.4, REF.27

JOURNAL NUMBER: F0002AAX ISSN NO: 0004-4210 CODEN: AGKHA

UNIVERSAL DECIMAL CLASSIFICATION: 666.11.01

LANGUAGE: English COUNTRY OF PUBLICATION: Japan

DOCUMENT TYPE: Journal

ARTICLE TYPE: Original paper

MEDIA TYPE: Printed Publication

ABSTRACT: Glasses doped with **Cu2O** microcrystallites in diameter of 15-100 nm were prepared by an ion-exchange method using soda-lime-silicate glass substrates and **copper** containing paste. The size and the concentration of **Cu2O** microcrystallites in glasses increased with increasing ion-exchange temperature and duration. The optical absorption ascribed to the excitons of **Cu2O** and optical effect due to the exciton confinement in **Cu2O** microcrystallite were observed. Third-order nonlinear optical susceptibility .CHI.(3) was measured by a degenerated four wave mixing with two beams. The maximum value of .CHI.(3) was  $5 \times 10^{-10}$  esu at 475 nm which corresponded to the absorption wavelength of **Cu2O** exciton. This result indicates that the third-order optical nonlinearity of **Cu2O** microcrystallite-doped glasses arises from the resonance effect of excitons. (author abst.)

41/3,AB/5 (Item 2 from file: 94)

DIALOG(R)File 94:JICST-EPlus

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00991494 JICST ACCESSION NUMBER: 90A0210340 FILE SEGMENT: JICST-E

Micro-analysis of high-Tc superconducting oxides, Y-Ba-**Cu-O** system and Bi-Sr-Ca-**Cu-O** system.

TAKAHASHI H (1); **KONDO Y** (1); OKUMURA T (1); SEO Y (1)

(1) JEOL Ltd.

JEOL News Electron Opt Instrum, 1989, VOL.27,NO.2, PAGE.2-7, FIG.9, TBL.1, REF.8

JOURNAL NUMBER: Y0015AAY ISSN NO: 0385-4426

UNIVERSAL DECIMAL CLASSIFICATION: 537.312.62.01

LANGUAGE: English COUNTRY OF PUBLICATION: Japan

DOCUMENT TYPE: Journal

ARTICLE TYPE: Original paper

MEDIA TYPE: Printed Publication

41/3,AB/6 (Item 3 from file: 94)

DIALOG(R)File 94:JICST-EPlus

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00524047 JICST ACCESSION NUMBER: 88A0030010 FILE SEGMENT: JICST-E

On the effect of the metal oxide powder in ozonizer.

KAJITA S (1); USHIRODA S (1); **KONDO Y** (1)

(1) Toyota Coll. Technology, Toyota-city, JPN

Denki Gakkai Hoden Kenkyukai Shiryo, 1987, VOL.ED-87,NO.68.69.71-75, PAGE.17-20, FIG.3, TBL.2, REF.6

JOURNAL NUMBER: Z0911AAI

UNIVERSAL DECIMAL CLASSIFICATION: 661.9

LANGUAGE: English COUNTRY OF PUBLICATION: Japan

DOCUMENT TYPE: Conference Proceeding

02/14/2003

ARTICLE TYPE: Original paper  
MEDIA TYPE: Printed Publication

41/3,AB/7 (Item 4 from file: 94)  
DIALOG(R)File 94:JICST-EPlus  
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00285110 JICST ACCESSION NUMBER: 86A0399232 FILE SEGMENT: JICST-E  
Oxidation of Cu<sub>2</sub>S pellet.  
ASAKI Z (1); UEGUCHI A (1); TANABE T (1); **KONDO Y** (1)  
(1) Kyoto Univ.  
Trans Jpn Inst Met, 1986, VOL.27,NO.5, PAGE.361-371, FIG.14, TBL.4, REF.13  
JOURNAL NUMBER: G0668AAU CODEN: TJIMA  
UNIVERSAL DECIMAL CLASSIFICATION: 669.2/.8.01 622.78  
LANGUAGE: English COUNTRY OF PUBLICATION: Japan  
DOCUMENT TYPE: Journal  
ARTICLE TYPE: Original paper  
MEDIA TYPE: Printed Publication  
ABSTRACT: The oxidation of Cu<sub>2</sub>S pellet in a mixed O<sub>2</sub>-Ar gas stream was studied at 1023 to 1123K. The oxygen partial pressure in the mixed gas stream was 5.05\*10<sup>3</sup> to 2.02\*10<sup>4</sup>Pa. In the initial 100s of oxidation, the pellet temperature was raised due to the heat of oxidation, and the formation of CuO was hindered, which resulted in a rapid mass decrease due to the oxidation of Cu<sub>2</sub>S to form **Cu<sub>2</sub>O**. At 1123K, the pellet was partly melted, and the oxidation was accelerated at the initial stage, where the rate was controlled by the gas film mass transfer especially when the oxygen partial pressure was lower. It was found at 1023K that the basic sulfate was formed during the oxidation in addition to **Cu<sub>2</sub>O** and CuO. It was decomposed to form CuO at the later stage of oxidation. The oxidation rate at 1073K was analysed by a two-interface model in which the formation of the Cu<sub>2</sub>S/**Cu<sub>2</sub>O** and **Cu<sub>2</sub>O**/CuO interfaces was taken into consideration.(author abst.)

41/3,AB/8 (Item 1 from file: 144)  
DIALOG(R)File 144:Pascal  
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10021124 PASCAL No.: 92-0113531  
Theory of positive muon spin rotation in La SUB 2 CuO SUB 4  
International conference on materials and mechanisms of superconductivity high temperature superconductors. III. II, Kanasawa, Japan, July 22-26, 1991  
**SAITO R**; KAMIMURA H; NAGAMINE K  
TACHIHI Masashi, ed; MUTO Yoshio, ed; SYONO Yasuhiko, ed; NAKAJIMA Sadao, pref  
Univ. Tokyo, fac. sci., Meson sci. lab., Bunkyo-ku, Tokyo 113, Japan  
Tohoku univ., inst. materials res., Sendai, Japan  
Materials and mechanisms of superconductivity high temperature superconductors. International conference, 3 (Kanazawa JPN) 1991-07-22  
Journal: Physica. C. Superconductivity, 1991, 185/89 (p.2) 1217-1218  
Language: English Summary Language: English  
Crystal potential of La SUB 2 CuO SUB 4 for a positive muon is calculated by adding the atomic potentials of La, **Cu** and O atoms which are calculated by spin-dependent self-consistent atomic Shroedinger equation. We have found that the stable site for a positive muon is located in the interlayer region between two **Cu-O** planes

41/3,AB/9 (Item 2 from file: 144)

02/14/2003

DIALOG(R)File 144:Pascal  
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09062657 PASCAL No.: 90-0230987

Electronic structures of Nd SUB 2 CuO SUB 4 and its electron-doped cluster systems

ETO M; **SAITO R**; KAMIMURA H

Univ. Tokyo, dep. physics, Bunkyo-ku 113, Japan

Journal: Materials science & engineering. B, Solid-state materials for advanced technology, 1990, 6 (1) L1-L4

Language: English

First principles multi-configuration self-consistent field calculations are performed for the electronic states of Nd-Cu-O systems, taking a Cu SUB 2 O SUB 7 cluster as a model. We show that, in the undoped system, electrons localized in Cu d SUB x SUB 2 SUB - SUB y SUB 2 orbitals interact antiferromagnetically with an exchange coupling constant of 0.28 eV and that, in the electron-doped system, a dopant electron is accommodated in the Cu 4s bonding orbital

41/3,AB/10 (Item 3 from file: 144)

DIALOG(R)File 144:Pascal  
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08910922 PASCAL No.: 90-0078922

Cluster simulation of correlation effect in hole-doped high-temperature superconductor

ETO M; **SAITO R**; KAMIMURA H

Univ. Tokyo, fac. sci., dep. physics, Bunkyo-ku Tokyo 113, Japan

Journal: Solid State Communications, 1989, 71 (5) 425-429

Language: English

Electronic states of La-Cu-O system are calculated from the first principles, using the MCSCF-CI method and by taking CuO SUB 6 and Cu SUB 2 O SUB 1 SUB 1 clusters as a model. For CuO SUB 6 it is shown that the electronic states are very sensitive to the distance between the apical oxygen and copper atoms, which becomes shorter with doping divalent ions. For Cu SUB 2 O SUB 1 SUB 1 it is shown in the undoped case that two electrons are localized in copper d SUB x SUB 2 SUB - SUB y SUB 2 orbitals and make anti-ferromagnetic coupling with exchange integral J of 1600 K. When a hole is doped, we show that a doped hole spends 39% of time at copper sites while 61% at oxygen sites. This is due to the energy gain arising from direct anti-ferromagnetic exchange between Cu and O unpaired spins which results in ferromagnetic spin-coupling between Cu spins

41/3,AB/11 (Item 4 from file: 144)

DIALOG(R)File 144:Pascal  
(c) 2003 INIST/CNRS. All rts. reserv.

07567636 PASCAL No.: 87-0404893

A thermodynamic study of Cu SUB 2 O-CaO melts in equilibrium with liquid copper

(Etude thermodynamique de bains Cu SUB 2 O-CaO en equilibre avec le cuivre liquide)

OISHI T; **KONDO Y**; ONO K

Kyoto univ., dep. metallurgy, Sakyo-ku Kyoto 606, Japan

Journal: Transactions of the Japan institute of metals, 1986, 27 (12) 976-980

Language: English

Mesure de la pression partielle de l'oxygene dans ces bains a 1573 K par

02/14/2003

une cellule galvanique a electrolyte solide. Dosage dans des echantillons d'oxydes trempes a 1573 K du **Cu**, de l'oxygene combinee a **Cu**, de Mg et de Ca. Calcul des activites thermodynamiques de **Cu** SUB 2 O et CaO dans les bains a partir des pressions partielles d'oxygene

02/14/2003

44/3,AB/1 (Item 1 from file: 434)  
DIALOG(R)File 434:SciSearch(R) Cited Ref Sci  
(c) 1998 Inst for Sci Info. All rts. reserv.

07393087 Genuine Article#: C9878 Number of References: 15  
Title: PREPARATION AND SOME SEMICONDUCTING PROPERTIES OF CUINSE2 THIN-FILMS  
Author(s): ISOMURA S; NAGAMATSU A; SHINOHARA K; **AONO T**  
Corporate Source: EHIME UNIV,FAC ENGN/MATSUYAMA/EHIME 790/JAPAN/;  
    MITSUBISHI ELECT CORP,HYOGO KU/KOBE 652//JAPAN/  
Journal: SOLAR CELLS, 1986, V16, N1-4, P143-153  
Language: ENGLISH Document Type: ARTICLE

44/3,AB/2 (Item 1 from file: 144)  
DIALOG(R)File 144:Pascal  
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12602902 PASCAL No.: 96-0290370  
Third-order optical non-linearities of CuCl-doped glasses in a near  
resonance region  
Physics of non-crystalline solids  
**KONDO Y**; KUROIWA Y; SUGIMOTO N; MANABE T; ITO S; TOKIZAKI T;  
NAKAMURA A  
    KARLSSON Kaj H, ed; FROEBERG Kaj, ed  
    Research Center, Asahi Glass Co., Ltd., 1150 Hazawa-Cho, Kanagawa-Ku,  
Yokohama, 221, Japan  
    Abo Akademi University, Department of Chemical Engineering, Laboratory  
for Inorganic Chemistry, 20500 Abo, Finland  
    International Conference on the Physics of Non-Crystalline Solids, 8 (Turku FIN) 1995-06-28  
Journal: Journal of non-crystalline solids, 1996, 196 (1-3) 90-94  
Language: English  
Third-order optical non-linearities of CuCl microcrystallites with sizes  
of 6.8-11.0 nm in glasses were investigated. Absolute values of third-order  
non-linear susceptibilities,  $-\chi^{(3)}_{\text{SUP}}(-\omega_{\text{SUB}1} : \omega_{\text{SUB}1}, -\omega_{\text{SUB}1}, \omega_{\text{SUB}1})$ , were measured in the resonance  
region by a degenerate four-wave mixing method and  $-\chi^{(3)}_{\text{SUP}}(-\omega_{\text{SUB}2} : \omega_{\text{SUB}1}, -\omega_{\text{SUB}1}, \omega_{\text{SUB}2})$  were measured  
in the near resonance region by a non-degenerate four-wave mixing method.  $-\chi^{(3)}_{\text{SUP}}(-\omega_{\text{SUB}1} : \omega_{\text{SUB}1}, -\omega_{\text{SUB}1}, \omega_{\text{SUB}1})$  was strongly dependent on the frequency,  $\omega_{\text{SUB}1}$ , of incident  
beam, while  $-\chi^{(3)}_{\text{SUP}}(-\omega_{\text{SUB}2} : \omega_{\text{SUB}1}, -\omega_{\text{SUB}1}, \omega_{\text{SUB}2})$  was less dependent on the frequency,  $\omega_{\text{SUB}2}$ ,  
of incident beam under the resonant excitation condition. In the  
non-degenerate four-wave mixing configuration in which the pumping  
frequency is resonant with the confined excitons, the figure of merit,  $-\chi^{(3)}_{\text{SUP}}(-\omega_{\text{SUB}2} : \omega_{\text{SUB}1}, -\omega_{\text{SUB}1}, \omega_{\text{SUB}2}) / \alpha$ , was enhanced to more than an order of  
magnitude compared with that in the degenerate four-wave mixing  
configuration in a near resonance region.

44/3,AB/3 (Item 2 from file: 144)  
DIALOG(R)File 144:Pascal  
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07459693 PASCAL No.: 87-0090613  
(Oxydation du sulfure mixte de nickel et de fer)  
(Oxidation of mixed nickel-iron sulfide)  
**TANABE T**; OGAWA M; ASAKI Z; **KONDO Y**  
Univ., fac. eng., Kyoto, Japan

02/14/2003

Journal: Nippon Kinzoku Gakkaishi (1952). (Journal of the Japan Institute of Metals), 1986, 50 (2) 192-200

Language: Japanese Summary Language: English

Essai d'oxydation d'une plaquette compacte de composition Ni SUB 3 S SUB 2 -3% en poids FeS dans un courant de melange gazeux O SUB 2 -Nr a 923, 973 et 1023 K. L'augmentation de poids de l'echantillon est plus rapide que dans le cas de Ni SUB 3 S SUB 2 . On observe qu'une couche de **NiO** se forme entre le sulfure et NiFe SUB 2 O SUB 4 **au** cours de l'oxydation a 1023 K

44/3,AB/4 (Item 3 from file: 144)

DIALOG(R)File 144:Pascal

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05693579 PASCAL No.: 84-0194303

Oxidation of nickel sulfide

(Oxydation du sulfure de nickel)

ASAKI Z; HAJIKA K; TANABE T; **KONDO Y**

Kyoto univ., dep. metallurgy, Kyoto 606, Japan

Journal: Metallurgical transactions B: process metallurgy, 1984, 15 (1) 127-133

Language: English

Dans le cadre des recherches sur les mattes de Ni-Cu de convertisseurs, etude de l'oxydation de sulfure de Ni avec des fractions atomiques de S variant de 0,4 a 0,44, par des melanges gazeux O SUB 2 -N SUB 2 a 923, 973 et 1023 K. Interpretation de la progression de l'oxydation d'apres le degagement de SO SUB 2

44/3,AB/5 (Item 4 from file: 144)

DIALOG(R)File 144:Pascal

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01182950 PASCAL No.: 76-0012098

A THERMODYNAMIC CALCULATION ON THE NICKEL SEGREGATION PROCESS

KIMURA K; **KONDO Y**

GRAD. SCH., KYOTO UNIV., KYOTO, JAPAN

Journal: TRANS. JAP. INST. METALS, 1975, 16 (12) 745-754

Language: ENGLISH

EQUILIBRES CHIMIQUES **AU** COURS DES PRINCIPALES ETAPES DU PROCEDE DE TRAITEMENT DES MINERAIS OXYDES A FAIBLE TENEUR DE NICKEL PAR SEGREGATION: HYDROLYSE A HAUTE TEMPERATURE DE CaCl SUB 2 POUR LA PRODUCTION DE HCL, CHLORURATION DE **NIO** ET FEO CONTENUS DANS LES MINERAIS DE TYPE GARMERITE ET LATERITE, REDUCTION DE NiCl SUB 2 ET FeCl SUB 2 PAR H SUB 2 . CALCUL DE LA COMPOSITION DE L'ALLIAGE NI-FE PRECIPITE SUR LES PARTICULES DE CARBONE: 35 A 50 MOL% NI SI LA PRECIPITATION A LIEU ENTRE 900 ET 1000 SUP O

FILE 'REGISTRY'

L1 3 SEA ABB=ON PLU=ON COPPER OXIDE/CN  
L2 1 SEA ABB=ON PLU=ON TIN OXIDE/CN  
L3 0 SEA ABB=ON PLU=ON LEAD OXIDE/CN  
L4 4 SEA ABB=ON PLU=ON LEAD OXIDE/CN  
L5 6100 SEA ABB=ON PLU=ON NICKEL OXIDE  
L6 2 SEA ABB=ON PLU=ON NICKEL OXIDE/CN

FILE 'WPIX, HCAPLUS, JAPIO'

L7 49983 SEA ABB=ON PLU=ON CUO OR CU2O  
L8 46390 SEA ABB=ON PLU=ON PBO2 OR PB3O4 OR PBO  
L9 31873 SEA ABB=ON PLU=ON NIO  
L10 936359 SEA ABB=ON PLU=ON S CU OR COPPER  
L11 338359 SEA ABB=ON PLU=ON GOLD OR AU  
L12 552338 SEA ABB=ON PLU=ON SILVER OR AG  
L13 1755100 SEA ABB=ON PLU=ON AL OR ALUMINIUM OR ALUMINUM  
L14 49780 SEA ABB=ON PLU=ON ((L7 OR L8 OR L9)) AND ((L10 OR L11 OR  
L12 OR L13))  
L15 33574 SEA ABB=ON PLU=ON (COMPOSITE OR  
MIXTURE)(5N)(SINTER?)  
L16 723 SEA ABB=ON PLU=ON L14 AND L15  
L17 4 SEA ABB=ON PLU=ON L16 AND PLASTIC  
L18 26970 SEA ABB=ON PLU=ON (COMPOSITE OR  
MIXTURE)(3N)(SINTER?)  
L19 578 SEA ABB=ON PLU=ON L14 AND L18  
L20 121921 SEA ABB=ON PLU=ON (COMPOSITE OR  
MIXTURE)(2N)(MATERIAL)  
L21 2038 SEA ABB=ON PLU=ON L20(3N) SINTER?  
L22 33 SEA ABB=ON PLU=ON L14 AND L21  
L23 37 SEA ABB=ON PLU=ON L17 OR L22

02/14/2003

L23 ANSWER 1 OF 37 WPIX (C) 2003 THOMSON DERWENT

AN 1995-080485 [11] WPIX

DNC C1995-036337

TI temp. crystallisation catalyst for sintering scrap glass charges - includes specified wt. concn. of **copper** oxide and reduces energy costs.

DC J04 L01

IN BATALIN, B S; MAKAROVA, L E; PRAVINA, N A

PA (PRPO) PERM POLY

CYC 1

PI RU 2014300 C1 19940615 (199511)\* 3p

ADT RU 2014300 C1 SU 1991-4946901 19910618

PRAI SU 1991-4946901 19910618

AB RU 2014300 C UPAB: 19950322

An addn. of 0.5-1.0 wt.% Cu(II)O is made to scrap glass mixts. to act as a low temp. crystallisation catalyst during sintering operations.

In the prepn., scrap glass is crushed to a 0-315 $\mu$ m particle size range, mixed with the **CuO** and fired for 2 hours at 700deg.C..

USE - Is used in the building industry to produce facing and lining **material for sintered mixts.** of scrap glass.

ADVANTAGE - Energy costs are reduced.

Dwg.0/0

L23 ANSWER 2 OF 37 WPIX (C) 2003 THOMSON DERWENT

AN 1994-019457 [03] WPIX

DNN N1994-014936 DNC C1994-009021

TI Ferrite sintered body for magnetic core for chip conductor, etc - contg nickel, **copper** and zinc, produced by sintering mixt contg phosphorus.

DC L03 M22 V02

PA (DENK) TDK CORP

CYC 1

PI JP 05326242 A 19931210 (199403)\* 6p

JP 3174398 B2 20010611 (200135) 6p

ADT JP 05326242 A JP 1992-148517 19920515; JP 3174398 B2 JP 1992-148517 19920515

FDT JP 3174398 B2 Previous Publ. JP 05326242

PRAI JP 1992-148517 19920515

AB JP 05326242 A UPAB: 19940303

Ferrite sintered body contains at least two of Ni, Cu and Zn, and is produced by **sintering** a starting **material mixt**

. The starting **material** mixt contains 8-90 ppm P.

Pref. the ferrite is e.g. Ni-Cu-Zn series, Ni-Cu series, Ni-Zn series or Cu-Zn series ferrite, and pref. contains 40-52 mol% Fe<sub>2</sub>O<sub>3</sub>, 0-50 mol% **NiO**, 0-20 mol% **CuO** and 0-50 mol% ZnO. The ferrite may contain up to 5 wt.% Co and Mn etc., and upto 1 wt.% Ca, Si, Bi, V and Pb etc. Ferrite powder used for prodn. of the sintered body is produced by wet mixing powder of **NiO**, ZnO, **CuO** and/or Fe<sub>2</sub>O<sub>3</sub> etc., and P<sub>2</sub>O<sub>5</sub> in a ball mill, spray drying, sintering, wet powdering by a ball mill into particle size of 0.01-0.5 microns, and then spray drying.

USE/ADVANTAGE - Ferrite sintered body has a high ' $\mu$  i value', L value and Q value can be obtained, and is used for a complex layered part or magnetic core for a chip inductor or LC device, etc.

Dwg.1/1

L23 ANSWER 3 OF 37 WPIX (C) 2003 THOMSON DERWENT

AN 1993-244131 [31] WPIX

DNN N1993-187686 DNC C1993-108760

TI **Sintered composite material** used for electrical contacts - comprises **silver**, tin oxide, bismuth



02/14/2003

oxide, **copper** oxide and further iron or Gp-VI B oxide.

DC L02 L03 V03 X12

IN HAUNER, F

PA (SIEI) SIEMENS AG

CYC 5

PI DE 4201940 A1 19930729 (199331)\* 4p

WO 9315517 A1 19930805 (199332) DE 19p

EP 623240 A1 19941109 (199443) DE

JP 07503097 W 19950330 (199521) 5p

US 5486222 A 19960123 (199610) 5p

EP 623240 B1 19960327 (199617) DE 10p

DE 59302058 G 19960502 (199623)

ES 2085139 T3 19960516 (199627)

BR 9305775 A 19970218 (199714)

ADT DE 4201940 A1 DE 1992-4201940 19920124; WO 9315517 A1 WO 1993-DE52 19930122; EP 623240 A1 EP 1993-902042 19930122, WO 1993-DE52 19930122; JP 07503097 W JP 1993-512847 19930122, WO 1993-DE52 19930122; US 5486222 A WO 1993-DE52 19930122, US 1994-256643 19940718; EP 623240 B1 EP 1993-902042 19930122, WO 1993-DE52 19930122; DE 59302058 G DE 1993-502058 19930122, EP 1993-902042 19930122, WO 1993-DE52 19930122; ES 2085139 T3 EP 1993-902042 19930122; BR 9305775 A BR 1993-5775 19930122, WO 1993-DE52 19930122

FDT EP 623240 A1 Based on WO 9315517; JP 07503097 W Based on WO 9315517; US 5486222 A Based on WO 9315517; EP 623240 B1 Based on WO 9315517; DE 59302058 G Based on EP 623240, Based on WO 9315517; ES 2085139 T3 Based on EP 623240; BR 9305775 A Based on WO 9315517

PRAI DE 1992-4201940 19920124

AB DE 4201940 A UPAB: 19931118

**Sintered composite material** (I) consists of

AgSnO<sub>2</sub>Bi<sub>2</sub>O<sub>3</sub>CuO and at least one further oxide of a highly melting metal, the metal oxide contg. Fe and at least one element of gp. IVb.

Pref. the metal oxide is FeWO<sub>4</sub> in an amt. of less than 1.5 (less than 0.5) wt.%. (I) contains 3-12 (wt.%) ZnO, 0.5-4 WO<sub>3</sub>, 0.3-2 **CuO** and 0.1-2 FeWO<sub>4</sub> and has compsn. AgSnO<sub>2</sub> 6.5Bi<sub>2</sub>O<sub>3</sub> . 0.7CuO 0.7FeWO<sub>4</sub> 0.4 or AgSn<sub>2</sub> 8Bi<sub>2</sub>O<sub>3</sub>/**CuO**/FeWO<sub>4</sub> 0.4.

USE/ADVANTAGE - (I) can be used for electrical contacts in switches, esp. low voltage switches. (I) does not weld together on short circuiting. Dwg.0/0

L23 ANSWER 4 OF 37 WPIX (C) 2003 THOMSON DERWENT

AN 1991-189205 [26] WPIX

DNN N1991-144770 DNC C1991-082138

TI Easily workable substrate for magnetic media - is made of **copper** oxide- cobalt oxide basis oxide and is used to mfr. magnetic head.

DC L03 M26 T03

PA (MATU) MATSUSHITA ELEC IND CO LTD

CYC 1

PI JP 03116410 A 19910517 (199126)\*

ADT JP 03116410 A JP 1989-253320 19890928

PRAI JP 1989-253320 19890928

AB JP 03116410 A UPAB: 19930928

Substrate material for a magnetic head is made of a **CuO**-CoO basis oxide. Opt. a magnetic head comprises a tape sliding face of the head chip, which contacts a magnetic tape. The magnetic material is sandwiched by the substrates.

A substrate material was made by hot press **sinter** of a raw **material mixt.** of 90 : 10 mol.% ratio of **CuO** :CoO. A magnetic head was made by combination of ; substrate (6) (9) material, 30 microns thick CO<sub>8</sub>1Nb<sub>1</sub>3Zr<sub>6</sub> non-crystalline film (7), fusing glass layer (8), winding window (10), SiO<sub>2</sub> of gap spacer (12), fusing glass (11).

ADVANTAGE - The substrate material has easy workability. The head has

02/14/2003

less biased wear so that it has no lowering of head output by spacing loss.  
1-4/4

L23 ANSWER 5 OF 37 WPIX (C) 2003 THOMSON DERWENT

AN 1990-062697 [09] WPIX

DNN N1990-048190 DNC C1990-027249

TI Super electric conductive composite oxide prodn. - where mixt. of bismuth-, strontium, calcium, and **copper** cpds. are sintered in oxygen atmos., etc..

DC L03 U14 X12

PA (MITP) MITSUBISHI PETROCHEMICAL CO LTD

CYC 1

PI JP 02014824 A 19900118 (199009)\* 3p

ADT JP 02014824 A JP 1988-163041 19880630

PRAI JP 1988-163041 19880630

AB JP 02014824 A UPAB: 19930928

A mixt. of a Bi cpd., a Sr cpd., a Ca cpd., and a Cu cpd. is sintered in an oxygen atmos. at 800-880 deg.C, then pulverised and sintered in the oxygen atmos. at 865 +/- 5 deg.C for more than 400 hrs.

USE/ADVANTAGE - Useful for mfg. raw materials of Bi-Sr-Ca-Cu system super electric conductive (S.E.C) composite oxides. This method is able to decrease the concn. of the low temp. phase of Bi-Sr-Ca-Cu system composite oxide by **sintering** the **mixt.** of raw **material** at a fixed temp. for long hours, to produce an S.E.C. composite oxide of Tc greater than 100 K efficiently.

In an example, 11.65g of Bi<sub>2</sub>O<sub>3</sub>, 7.38g of SrCO<sub>3</sub>, 5.00g of CaCO<sub>3</sub>, and 7.96g of **CuO** were mixed for 1 hr. The mixt. was sintered at 860-880 deg.C for 10 hrs. and the sintered material was pulverised and pelletised. The pellets were sintered at 865 +/- 5 deg.C for 900 hrs. The Tc value of the prod. was 107.5 K. The specimen that was sintered at 865 +/- 5 deg.C for 400 hrs. also showed a Tc value of 107.5 K.  
0/0

L23 ANSWER 6 OF 37 WPIX (C) 2003 THOMSON DERWENT

AN 1989-291051 [40] WPIX

DNN N1989-222004 DNC C1989-129047

TI Single crystal prepn. of rare earth barium **copper** oxide cpd. - comprises sintering formed body of pulverised mixt. of raw materials, cooling and reheating.

DC J04 L03 U14 X12

PA (MIMI) MITSUI KOZAN KK

CYC 1

PI JP 01215798 A 19890829 (198940)\* 6p

ADT JP 01215798 A JP 1988-37502 19880222

PRAI JP 1988-37502 19880222

AB JP 01215798 A UPAB: 19930923

Single crystals of a cpd. of formula RBa<sub>2</sub>Cu<sub>3</sub>O<sub>7-delta</sub> (a rare earth element) is prepd. by (a) preparing a pressure formed body from a pulverised mixt. of raw materials in a proportion to yield after sintering the cpd. and excess **CuO** in a ratio 50 - 10 : 50 - 90 in mol.%, (b) sintering the formed body at 1,100 - 1,300 deg.C to produce a sintered body having in its interior a closed void, (c) cooling the sintered body rapidly to 500 deg.C or below and (d) reheating the cooled sintered body and maintaining it at 920-1,050 deg.C for a long time to effect crystal growth.

ADVANTAGE - Large single crystals of oxide superconductor are produced at low temps., allowing the use of cheap alumina crucibles.  
4/4

L23 ANSWER 7 OF 37 WPIX (C) 2003 THOMSON DERWENT

02/14/2003

AN 1989-050356 [07] WPIX  
DNN N1989-038471 DNC C1989-022257  
TI superconducting material used for electromagnets, etc. - comprises composite oxide sintered compact contg. at least barium, yttrium and **copper**.  
DC L03 U14 X12  
PA (SUME) SUMITOMO ELECTRIC IND CO  
CYC 1  
PI JP 01006319 A 19890110 (198907)\* 10p  
ADT JP 01006319 A JP 1988-73959 19880328  
PRAI JP 1987-73108 19870327; JP 1988-73959 19880328  
AB JP 01006319 A UPAB: 19930923  
Superconducting **material** is **composite** oxide **sintered** compact contg. at least Ba, Y, and Cu, and has thickness of up to 1 mm, pref., up to 0.5 mm from the surface to the centre. The superconducting material is made by repeated pre-firing and pulverising the raw material powder of the mixt. contg. oxide or carbonate of each Ba, Y, and Cu at least once; compacting the obtd. burnt powder to the thickness; followed by sintering.  
USE/ADVANTAGE - For power transmission, power storage, and electromagnets for high magnetic field generation. With the method, uniformity of O2-lack concn. can be achieved, and superconducting material having high critical temp. and critical current density, and less ageing can be obtd..  
In an example, the raw material was prepd. by formulating BaCO<sub>3</sub>, Y<sub>2</sub>O<sub>3</sub>, and CuO powder ( up to 50 microns ave. size, and at least 99.9% purity for each powder) to have Ba<sub>1-x</sub>Y<sub>x</sub>Cu<sub>y</sub>O<sub>z</sub> (x=0.2, y=1) after firing.  
0/0

L23 ANSWER 8 OF 37 WPIX (C) 2003 THOMSON DERWENT

AN 1989-050352 [07] WPIX  
DNN N1989-038467 DNC C1989-022254  
TI Superconducting material used for electromagnets, etc. - comprises composite oxide sintered compact contg. at least barium, holmium and **copper**.  
DC L03 U14 X12  
PA (SUME) SUMITOMO ELECTRIC IND CO  
CYC 1  
PI JP 01006315 A 19890110 (198907)\* 10p  
ADT JP 01006315 A JP 1988-73955 19880328  
PRAI JP 1987-73104 19870327; JP 1988-73955 19880328  
AB JP 01006315 A UPAB: 19930923  
Superconducting **material** is **composite** oxide **sintered** compact contg. at least Ba, Ho, and Cu, and has thickness of up to 1 mm from the surface to the centre, pref., up to 0.5 mm. The superconducting material is made by repeated pre-firing and pulverising the raw material powder of the mixt. contg. oxide or carbonate of each Ba, Ho, and Cu at least once; compacting the obtd. burnt powder to required thickness; and sintering.  
USE/ADVANTAGE - For powder transmission, powder storage and electromagnets for high field generation. With the method, uniformity of O<sub>2</sub>-lack concn. can be achieved, and superconducting material having high critical temp. and critical current density and less ageing can be obtd..  
In an example, raw material was prepd. by formulating BaCO<sub>3</sub>, and CuO powder (up to 50 microns ave. size, at least 99.9% purity for each powder) to have compsn. of Ba<sub>1-x</sub>Ho<sub>x</sub>Cu<sub>y</sub>O<sub>z</sub> (x=0.2, y=1) after firing. The mixed powder was pre-fired in air at 900 deg.C for 12 hrs., then submitted to attrition up to 4 microns size with three cycles of compacting-firing-pulverising (attrition) to homogeneous composite oxide sintered compact powder. The composite oxide sintered compact powder was

02/14/2003

kneaded with PVB dissolved into toluene, as a binder, and with DBP, as a plasticiser, to 300 mm width x 5 m L x 1.0 mm thickness sheet by doctor blade process. The tape (1x1x 30mm) obtd. from the sheet was heat treated to 600 deg.C in air to remove the binder, and sintered it at 935 deg.C for 5 hrs.. The sintered compact tape thus obtd. had 65% relative density, 90 deg. K Tcs, 81 deg. K Tcf (9 deg. K delta T), and 585 A/cm2 critical current density.

0/0

L23 ANSWER 9 OF 37 WPIX (C) 2003 THOMSON DERWENT

AN 1988-316541 [45] WPIX

DNN N1988-240018 DNC C1988-139853

TI Sintered **copper**-based electric contact material - contg.

**copper**, nickel and graphite.

DC L03 M22 P53 V03

IN ALLIBERT, C; AMBIER, J; FRANCILLON, M; LAUGEE, C; FRANCILLON, M J

PA (MEGE) MERLIN GERIN SA

CYC 13

PI EP 290311 A 19881109 (198845)\* FR 4p

R: BE CH DE ES GB IT LI SE

FR 2615046 A 19881110 (198901)

JP 63293132 A 19881130 (198903)

PT 87395 A 19890531 (198925)

CN 88102580 A 19881123 (198944)

US 4919717 A 19900424 (199021)

EP 290311 B1 19921104 (199245) FR 4p

R: BE CH DE ES GB IT LI SE

DE 3875649 G 19921210 (199251)

ADT EP 290311 A EP 1988-400987 19880422; FR 2615046 A FR 1987-6286 19870504;

JP 63293132 A JP 1988-5366 19880427; US 4919717 A US 1988-185980 19880425;

EP 290311 B1 EP 1988-400987 19880422; DE 3875649 G DE 1988-3875649

19880422, EP 1988-400987 19880422

FDT DE 3875649 G Based on EP 290311

PRAI FR 1987-6286 19870504

AB EP 290311 A UPAB: 19930923

A **sintered copper-based composite**

**material** (A) for electric contacts contains 80-95 wt.% Cu, 2-15 wt.% Ni and 2-5 wt.% graphite. Also claimed are (i) a contact stud made of material (A); and (ii) a contact stud comprising a 0.1-0.5 mm. thick first layer of **copper** and a second layer of material (A), the two layers being compacted simultaneously.

USE/ADVANTAGE - The material is used for electric contacts in low voltage equipment such as circuit breakers, contactors or interrupters. It is less expensive than **silver** - based materials and has good electrical and thermal properties (e.g. good electrical and thermal conductivity, high oxidn. and erosion resistance, low contact resistance and low welding tendency).

0/0

L23 ANSWER 10 OF 37 WPIX (C) 2003 THOMSON DERWENT

AN 1987-182265 [26] WPIX

DNN N1987-136360 DNC C1987-076003

TI **Composite** sliding **material** - consists of porous

**sintered** metallic matrix impregnated with thermoplastic resin etc..

DC A81 M22 P53 Q62

PA (KOMS) KOMATSU KK

CYC 1

PI JP 62112707 A 19870523 (198726)\* 4p

ADT JP 62112707 A JP 1985-250623 19851111

PRAI JP 1985-250623 19851111

02/14/2003

AB JP 62112707 A UPAB: 19930922

Composite sliding material is prepared by impregnating a porous sintered body with a high molecular material at a high density. To powder of a base matrix metal such as Fe, Ni, Co, Cu, **Al**, or Ca-Zn, 5-40 vol % of high molecular material powder is added and the mixed powder is moulded into a moulded article by press moulding, isostatic pressing, or rolling. The moulded article is heated to decompose and gasify the high molecular material. Subsequently, the moulded article is sintered. The moulded article comprising a porous sintered body thus obt'd. is impregnated with a thermoplastic resin or a mixt. of it with a flourine resin, graphite, Pb, **PbO** ADVANTAGE - Composite sliding material having high hardness and having excellant abrasion resistance, self-lubricating properties and seizure resistance is obt'd.  
0/3

L23 ANSWER 11 OF 37 WPIX (C) 2003 THOMSON DERWENT

AN 1984-117930 [19] WPIX

DNN N1984-087032 DNC C1984-049921

TI Weldable electric contact material - obt'd. by sintering mixt. of nickel, cuprous oxide, indium tri oxide, zinc oxide and **silver**.

DC L03 M22 V03 X13

PA (OMRO) OMRON TATEISI ELECTRONICS CO

CYC 1

PI JP 59056550 A 19840402 (198419)\* 3p

ADT JP 59056550 A JP 1982-168997 19820927

PRAI JP 1982-168997 19820927

AB JP 59056550 A UPAB: 19930925

Contact material is obt'd. by sintering compsn. contg. 10-20 wt.% Ni, 2.5-20 wt.% **Cu2O**, 2.5-15 wt.% In2O3, 2.5-15 wt.% ZnO and balance **Ag**. The material, provides better welding property than materials obt'd. from **Ag**-Ni alloy and **Ag**-CdO alloy. In an example, 70 wt.% **Ag**, 15 wt.% Ni, 5 wt.% **Cu2O**, 5 wt.% In2O3 and 5 wt.% ZnO were mixed and pressed under 4 ton/cm2 to make a disc, which was sintered at 800 deg. C and extruded at 750 deg. C to form wires.  
0/0

L23 ANSWER 12 OF 37 WPIX (C) 2003 THOMSON DERWENT

AN 1978-55690A [31] WPIX

TI Varistor for surge voltage absorbing elements etc. - comprises sintered blend of bismuth, cobalt, manganese, chromium, antimony, lead, boron, silicon and zinc oxide(s).

DC A85 L03 V01

PA (NIDE) NIPPON ELECTRIC CO

CYC 1

PI JP 53071257 A 19780624 (197831)\*

JP 56013366 B 19810327 (198117)

PRAI JP 1976-147306 19761207

AB JP 53071257 A UPAB: 19930901

Non-linear voltage resistor comprises a **sintered** body of a **mixt. material** obt'd. by adding 0.10-5.0 mol. % Bi2O3, 0.1-10.0 mol% CoO, 0.05-6.0 mol.% MnO, 0.1-5.0 mol.% Cr2O3, 0.1-7.0 mol.% Sb2O3, 0.01-0.5 mol% **PbO**, 0.01-1.0 mol% B2O3 and 0.01-0.5 mol% SiO2 to main component ZnO.

The starting materials, ZnO, Bi2O3, CoO, MnO, Cr2O3, Sb2O3, **PbO**, B2O3 and SiO2 powders are weighed and mixed so that the mixt. material has a predetermined compsn. ratio (molar ratio), and it is pre-sintered at 650-850 degrees C. The presintered body is added with a small amt. of a binder ne.g. 5% PVA aq. soln.), and pressed in a mould into a disc of 16 mm dia. The disc is then sintered at 1100-1300 degrees C for 1 hr., and polished into a 1 mm thickness ceramic discs.

02/14/2003

**Silver** electrodes (8 mm dia. are then printed on the disc.

The non-linear voltage resistor exhibits excellent voltage non-linear property, dielectric property, power resistant load characteristic and large current resistant pulse characteristic, and it is widely used as a surge voltage absorber element, voltage stabiliser, lightning arrester, etc.

L23 ANSWER 13 OF 37 WPIX (C) 2003 THOMSON DERWENT

AN 1978-48798A [27] WPIX

TI Sintered glass-composite high temp. sliding member - consisting of chromium, nickel or manganese, molybdenum, **copper**, carbon, lead, iron, etc., low m.pt. glass and solid lubricant.

DC L01 M22

PA (HOND) HONDA MOTOR IND CO LTD

CYC 1

PI JP 53060306 A 19780530 (197827)\*

JP 58023463 B 19830516 (198323)

PRAI JP 1976-134929 19761110

AB JP 53060306 A UPAB: 19930901

Sliding member used continuously or intermittently at high temp. in, e.g. internal combustion engines, heating furnaces, hot roll stands or the like, comprises a **sintered composite material** having porosity 0.5-30%.

The material consists (by wt.) of 15-35% Cr, 8-40% Ni or Mn, 0.1-6% Mo, 3-30% Cu, 0.1-2% C, 0.2-15% Pb, low 0.5-8% low melting point glass, >=1 of **Ag** and low melting point metals e.g. Bi, Sb and Sn 0.5-5% in total, 0.5-5% in total of >=1 of S, MoS2 and WS2 as solid lubricant, and balance Fe.

The glass, which consists of P2O5, B2O3, **PbO**, K2O and Na2O, acts as a lubricant at >300 degrees C. The density of the composite is 85-98%, hardness HRB 69-84. Seizing effect is reduced, and durability improved.

L23 ANSWER 14 OF 37 HCAPLUS COPYRIGHT 2003 ACS

AN 2002:830297 HCAPLUS

DN 137:332079

TI PTCR composite material for current limiters

IN Ishida, Yoshihiko

PA NGK Insulators, Ltd., Japan

SO U.S., 10 pp., Cont.-in-part of U.S. 6,300,862.

CODEN: USXXAM

DT Patent

LA English

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6472972	B1	20021029	US 2000-570749	20000515
	US 6300862	B1	20011009	US 2000-497845	20000203
	EP 1122211	A1	20010808	EP 2001-300778	20010130
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 2001237104	A2	20010831	JP 2001-25949	20010201
	CN 1307342	A	20010808	CN 2001-103209	20010205
PRAI	US 2000-497845	A2	20000203		
	US 2000-570749	A	20000515		

AB A reusable PTCR composite material with low room-temp. resistance, large resistance jump at the transition temp., a transition temp. <200.degree., high heat resistance, and low power loss consists of a matrix of ceramic material having one of a cristobalite crystal structure and a tridymite crystal structure, each doped with an oxide of at least one of Be, B, Mg, **Al**, Ca, Sc, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Ga, Ge and W, and a

02/14/2003

conductive phase dispersed throughout the matrix. The conductive phase includes at least one of a metal, silicide, nitride, carbide and boride.  
RE.CNT 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 15 OF 37 HCAPLUS COPYRIGHT 2003 ACS

AN 2001:814381 HCAPLUS

DN 135:365294

TI Heat-releasing materials for semiconductor devices and process and apparatus for molding materials thereof

IN Hori, Makoto; Suzumura, Takashi; Fuyu, Yoshihei; Kuroki, Kazuma

PA Hitachi Cable, Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001313356	A2	20011109	JP 2000-132365	20000501
PRAI	JP 2000-132365		20000501		

AB The title heat-releasing molded materials are made from a sintered mixt. contg. powd. metal and powd. inorg. compd. having low thermal expansion coeff. and have a trapezoidal cross-section. The inorg. compd. may contain 10-80 vol.% **Cu<sub>2</sub>O**. The trapezoidal cross-section gives the materials easy releasing from its casting die.

L23 ANSWER 16 OF 37 HCAPLUS COPYRIGHT 2003 ACS

AN 2001:547950 HCAPLUS

DN 135:98847

TI Material for oxygen electrode in electrochemical devices

IN Gil'derman, V. K.

PA Institut Vysokotemperaturnoi Elektrokhemii Ural'skogo Otdeleniya RAN, Russia

SO Russ., No pp. given

CODEN: RUXXE7

DT Patent

LA Russian

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	RU 2146360	C1	20000310	RU 1997-109771	19970610
PRAI	RU 1997-109771		19970610		

AB The invention relates to high- temp. electrochem. devices with solid oxide electrolyte and material of invention can be used as oxygen electrode in electrochem. oxygen transducers, oxygen pumps, electrolyzers, and fuel cells. Invention provides electrode material with laminar perovskite structure showing good conductance at high temps. Material contains cobalt, **copper**, yttrium, and barium oxides according to following formula:  $\text{YBa}_2(\text{Cu}_{1-x}\text{Co}_x)\text{O}_{6+\delta}$ . wherein  $x = 0.6-0.8$  and  $\delta = 0.0-1.0$ .

L23 ANSWER 17 OF 37 HCAPLUS COPYRIGHT 2003 ACS

AN 2001:247287 HCAPLUS

DN 134:270131

TI Manufacture of .alpha.-alumina-based abrasive grains from a boehmite dispersion

IN Erickson, Dwight D.

PA 3m Innovative Properties Company, USA

SO PCT Int. Appl., 41 pp.

CODEN: PIXXD2

02/14/2003

DT Patent  
LA English  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001023324	A1	20010405	WO 2000-US2422	20000128
	W:	AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
	RW:	GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG			
PRAI	US 1999-407672	A	19990928		
AB	The manuf. includes (a) prepg. a dispersion of liq. medium, peptizing agent, and boehmite, wherein the dispersion exhibits an .alpha.-alumina transition transformation temp. .ltoreq.1185.degree. and wherein .gtoreq.25 wt.% of the boehmite has a dispersibility value of 97.5-99%, (b) converting said dispersion to .alpha.-alumina-based ceramic abrasive grain precursor material, and (c) sintering the precursor to provide .alpha.-alumina-based ceramic abrasive grains having a d. of .gtoreq.95% of theor. d. wherein said abrasive grains have an av. crystallite size .ltoreq.1 .mu.m. The abrasive grains comprise also .gtoreq.0.1 wt.% of oxide selected from CeO2, Cr2O3, CoO, Dy2O3, Er2O3, Eu2O3, Fe2O3, Gd2O3, HfO2, La2O3, Li2O, MgO, MnO, Na2O, Nd2O3, <b>NiO</b> , Pr2O3, Sm2O3, SiO2, SnO2, TiO2, Y2O3, Yb2O3, ZnO, and ZrO2. The abrasive grain can be incorporated into abrasive products such as coated abrasives, bonded abrasives, non-woven abrasives, and abrasive brushes. Suitable org. binders for the abrasive products include thermosetting polymers.				
RE.CNT	2	THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD ALL CITATIONS AVAILABLE IN THE RE FORMAT			

L23 ANSWER 18 OF 37 HCAPLUS COPYRIGHT 2003 ACS  
AN 2000:803880 HCAPLUS  
DN 133:338625  
TI Composite material, manufacture thereof, and semiconductor device  
IN Kaneda, Junya; Kondo, Yasuo; Okamoto, Kazutaka; Abe, Teruyoshi; Aono, Yasuhisa  
PA Hitachi, Ltd., Japan  
SO Jpn. Kokai Tokkyo Koho, 15 pp.  
CODEN: JKXXAF  
DT Patent  
LA Japanese  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000313904	A2	20001114	JP 1999-121280	19990428
PRAI	JP 1999-121280		19990428		
AB	A composite is manufd. by mixing a metal powder and an inorg. material powder having thermal expansion coeff. lower than that of the metal and passing the mixt. between the rolls, thereby subjecting the <b>mixt</b> . to <b>plastic</b> processing simultaneously with <b>sintering</b> . Preferably, 50-95% of the inorg. particles are connected to each other, forming lumps of irregular shape. The composite with high thermal cond., low thermal expansion coeff., and high <b>plastic</b> processibility is suitable, e.g., for heat sinks of semiconductor devices.				

L23 ANSWER 19 OF 37 HCAPLUS COPYRIGHT 2003 ACS  
AN 2000:623502 HCAPLUS



02/14/2003

DN 133:226689  
TI Preparation of compositions and use in low temperature sintering process  
for production of dielectric porcelain  
IN Sugimoto, Yasutaka  
PA Murata Mfg. Co., Ltd., Japan  
SO Ger. Offen., 10 pp.  
CODEN: GWXXBX  
DT Patent  
LA German  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 10002812	A1	20000907	DE 2000-10002812	20000124
	DE 10002812	C2	20021121		
	JP 2000247735	A2	20000912	JP 1999-52878	19990301
	US 6270716	B1	20010807	US 1999-451736	19991130
	CN 1265384	A	20000906	CN 1999-127502	19991222
	CN 1093846	B	20021106		
PRAI	JP 1999-52878	A	19990301		

AB A dielec. porcelain is produced by: mixing **CuO** , preferably at 0.1-2.0 wt.% with a BaO-TiO<sub>2</sub>-ReO<sub>3</sub>/2-Bi<sub>2</sub>O<sub>3</sub> main material, where Re is a lanthanide, to obtain a ceramic **material mixt.**; **sintering** the mixt., preferably at .gtoreq.950.degree.; grinding the calcined material mixt.,preferably to an av. particle diam. of .ltorsim.2.0 .mu.; mixing a B<sub>2</sub>O<sub>3</sub>-SiO<sub>2</sub> glass with the ground material mixt. to give a glass ceramic **material mixt.**; and **sintering** the material, preferably at .ltoreq.1000.degree..  
Addnl. **CuO** may be added along with the glass component; the glass component may also include an alk. earth metal oxide. The final mixt. may be formed before calcination. At least 1 electrode may be placed inside a body surrounded by the glass ceramic material mixt. The received dielec. porcelain compn. is sinterable at low temps. and possesses a high specific dielec. const. and a high Q-value and a satisfying thermal stability.

L23 ANSWER 20 OF 37 HCAPLUS COPYRIGHT 2003 ACS

AN 1999:736557 HCAPLUS

DN 131:354633

TI Powder particles bonded with water glass for manufacture of sintered articles, molds, or cores

IN Huusmann, Ole

PA Dti Industri, Den.

SO PCT Int. Appl., 32 pp.

CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9958269	A1	19991118	WO 1999-DK249	19990505
	W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	DK 173647	B1	20010521	DK 1998-640	19980511
	AU 9935955	A1	19991129	AU 1999-35955	19990505

02/14/2003

EP 1085953                    A1    20010328                    EP 1999-917804    19990505  
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,  
IE, SI, LT, LV, FI, RO  
NO 2000005644                A    20010111                    NO 2000-5644                20001108  
PRAI DK 1998-640                A    19980511  
WO 1999-DK249                W    19990505  
AB Metal or oxide powder is mixed with water glass binder (esp. as aq. Na silicate), followed by heating for hardening of the green preform, and further heating for sintering to form the local contacts between the adjacent particles. The water glass is typically aq. Na silicate having the SiO<sub>2</sub>/Na<sub>2</sub>O wt. ratio of 1.8-3.5, and is heated at 100-250.degree. for drying and hardening. The sintered preforms show increased resistance to humidity or steam, and are suitable for molds and cores in casting of metals or alloys, or for stable cores in the injection molding of **plastics**. The sintered preform from metal particles is optionally infiltrated with a molten metal or alloy to manuf. composite articles. Com. Fe powder (size 50-180 .mu.m) at 6.0 kg was mixed in cylindrical app. with 180 mL water followed with 180 g of silicate having the SiO<sub>2</sub>/Na<sub>2</sub>O wt. ratio of 3.3, and the mixing was continued to have a flowable powder with 0.7% residual moisture. The silicate-coated powder was poured into a temporary mold and heated at 150.degree. for drying and hardening, and the resulting preform was removed from mold and presintered under H<sub>2</sub> atm. for 20 min at 700.degree., followed by sintering for 20 min at 1120.degree. and cooling to 100.degree..  
RE.CNT 7                    THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 21 OF 37 HCAPLUS COPYRIGHT 2003 ACS  
AN 1999:311453 HCAPLUS  
DN 130:315472  
TI Composite ceramics, and their manufacture and use  
IN Burger, Wolfgang; Kiefer, Gundula; Bellido, Eduardo; Andersch, Hans  
PA CeramTec A.-G., Germany  
SO Ger. Offen., 8 pp.  
CODEN: GWXXBX  
DT Patent  
LA German  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 19850366	A1	19990506	DE 1998-19850366	19981102
	WO 9923048	A1	19990514	WO 1998-EP6914	19981102
	W: JP, KR, US				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	EP 1028928	A1	20000823	EP 1998-963407	19981102
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
	JP 2001521874	T2	20011113	JP 2000-518926	19981102
	US 6452957	B1	20020917	US 2000-509839	20000706
PRAI	DE 1997-19748232	A1	19971031		
	WO 1998-EP6914	W	19981102		
AB	The ceramics contain (a) matrix material 60-98, (b) Al <sub>2</sub> O <sub>3</sub> -Cr <sub>2</sub> O <sub>3</sub> material 67.1-99.2, (c) .gtoreq.1 of La <sub>0.9</sub> Al <sub>11.76</sub> -xCr <sub>x</sub> O <sub>19</sub> , M <sub>1</sub> Al <sub>11</sub> -xCr <sub>x</sub> O <sub>17</sub> , M <sub>2</sub> Al <sub>12</sub> -xCr <sub>x</sub> O <sub>19</sub> , M <sub>2</sub> 'Al <sub>12</sub> -xCr <sub>x</sub> O <sub>19</sub> , and M <sub>3</sub> Al <sub>11</sub> -xCr <sub>x</sub> O <sub>18</sub> (M <sub>1</sub> = alkali metal; M <sub>2</sub> = alk. earth metal; M <sub>2</sub> ' = Cd, Pb, or Hg; M <sub>3</sub> = rare earth metal; x = 0.0007-0.045) 0.8-32.9, and the matrix material contains tetragonal-stabilized ZrO <sub>2</sub> 2-40 vol.%. The ZrO <sub>2</sub> is stabilized with 2-15 mol.% of .gtoreq.1 oxides selected from Ce, Pr, and Tb and/or 0.2-3.5 mol.% Y <sub>2</sub> O <sub>3</sub> (based on the ZrO <sub>2</sub> + stabilizing oxides) and contains 0-5 vol.% cubic ZrO <sub>2</sub> , the mol. ratio stabilizing oxide-contg. the ZrO <sub>2</sub> and the Cr <sub>2</sub> O <sub>3</sub>				

02/14/2003

is (1000-20):1 and the particle size of the ZrO<sub>2</sub> is .1 to req. 2 .mu.m. The composites are manufd. by milling a mixt. contg. Al<sub>2</sub>O<sub>3</sub>, ZrO<sub>2</sub>., Cr<sub>2</sub>O<sub>3</sub>, stabilizing oxides, and .gtoreq. 1 oxides selected from alkali metal oxides, alk. earth oxides, CdO, **PbO**, HgO, rare earth oxides and/or La<sub>2</sub>O<sub>3</sub>, adding a binder, spray drying the **mixt.**, molding the **material**, and **sintering** the greenware under std. conditions. The composite ceramics are used as cutting tools for cutting paper, textiles, and foils, for machining cast iron and steel, and as components in prostheses. A composite material was manufd. from a compn. contg. Al<sub>2</sub>O<sub>3</sub> 73.11, ZrO<sub>2</sub> 23.57, La<sub>2</sub>O<sub>3</sub> 2.48, and YCrO<sub>3</sub> 0.84 wt. %.

L23 ANSWER 22 OF 37 HCAPLUS COPYRIGHT 2003 ACS

AN 1995:306443 HCAPLUS

DN 122:138881

TI Anti-friction composite material and its application

AU Yang, Shouli; Yang, Jinhui; Liu, Xiaodong; Zhou, Wentong

CS Univ. Science and Technol., Beijing, Peop. Rep. China

SO Gangtie (1994), 29(8), 54-7

CODEN: KATIAR; ISSN: 0449-749X

PB Yejin Gongye Chubanshe

DT Journal

LA Chinese

AB High-quality anti-friction composite materials with self-lubricity are manufd. by vacuum sintering of Fe-Cu-graphite compacts contg. WS<sub>2</sub>, WC, ZnO, SnO, **PbO** and/or glass beads. The sintered products can serve under severe casting conditions. The mech. and phys. properties and the use of the sintered products are discussed.

L23 ANSWER 23 OF 37 HCAPLUS COPYRIGHT 2003 ACS

AN 1995:289981 HCAPLUS

DN 122:70348

TI Sintered **copper**/ferrite composite components

IN Sunahara, Hirobumi; Yoneda, Yasunobu; Kodama, Takashi

PA Murata Manufacturing Co, Japan

SO Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	JP 06132112	A2	19940513	JP 1992-303064	19921014
PRAI	JP 1992-303064		19921014		

AB The ferrite in the title sintered composite components contains (1) Ni-Mg ferrite 100 and **PbO** 0.3-5.0 wt. % or (2) Ni-Mg ferrite 100, **PbO** 0.3-5.0, B<sub>2</sub>O<sub>3</sub> 0.03-1.5, and SiO<sub>2</sub> 0.03-1.5 wt. %. The ferrite compns. make non-oxidative **sintering** of the **composite materials** possible for a high-d. components comprising Cu as a conductor.

L23 ANSWER 24 OF 37 HCAPLUS COPYRIGHT 2003 ACS

AN 1994:122501 HCAPLUS

DN 120:122501

TI **Sintered composite materials** for electrical

contacts for switching apparatus used in energy technology

IN Hauner, Franz

PA Siemens A.-G., Germany

SO Ger. Offen., 4 pp.

CODEN: GWXXBX

DT Patent

LA German

02/14/2003

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 4201940	A1	19930729	DE 1992-4201940	19920124
	JP 07503097	T2	19950330	JP 1993-512847	19930122
	US 5486222	A	19960123	US 1994-256643	19940718
PRAI	DE 1992-4201940		19920124		
	WO 1993-DE52		19930122		
AB	The title materials comprise <b>Ag-SnO2-Bi2O3-CuO</b> materials incorporating an addnl. oxide contg. Fe and a Group VI element (e.g., FeWO4).				

L23 ANSWER 25 OF 37 HCAPLUS COPYRIGHT 2003 ACS

AN 1993:413725 HCAPLUS

DN 119:13725

TI Science and technology in **composite materials**.

**Sintering** of **silver**-glass thick films

AU Imai, Hiroyuki; Yamaguchi, Takashi

CS Mitsubishi Mater. Ltd., Omiya, 330, Japan

SO Seramikkusu (1992), 27(11), 1092-9

CODEN: SERAA7; ISSN: 0009-031X

DT Journal; General Review

LA Japanese

AB A review with 6 refs. **Ag**-oxide glass (**PbO-B2O3-SiO2** and related systems) sintered thick films are described in terms of prepn. procedure, interaction between **Ag** and the glass phase, densification and microstructure of the composite system, and the influence of substrate materials on the nature of the thick film.

L23 ANSWER 26 OF 37 HCAPLUS COPYRIGHT 2003 ACS

AN 1991:685583 HCAPLUS

DN 115:285583

TI Enhanced superplastic deformation of 2 mol% yttria-stabilized tetragonal zirconia polycrystals-alumina composite by liquid-forming additives

AU Xue, Liang A.

CS Dep. Mater. Sci. Eng.; Univ. Michigan, Ann Arbor, MI, 48109, USA

SO Journal of Materials Science Letters (1991), 10(21), 1291-2

CODEN: JMSLD5; ISSN: 0261-8028

DT Journal

LA English

AB The superplastic deformation properties of 2 mol% Y2O3-stabilized tetragonal ZrO2 polycryst. (ZY-TZP) material contg. 20 wt.% Al2O3 and doped with 0.7 mol% liq.-forming additives were examd. This material exhibits a significantly enhanced deformability and a similar temp. dependent characteristic compared to that of **CuO**-doped ZY-TZP.

L23 ANSWER 27 OF 37 HCAPLUS COPYRIGHT 2003 ACS

AN 1991:621156 HCAPLUS

DN 115:221156

TI Manufacture of perovskite superconducting sintered material

IN Haseyama, Hideetsu; Kawazu, Koichi

PA Dowa Mining Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 03097655	A2	19910423	JP 1989-232459	19890907
PRAI	JP 1989-232459		19890907		

02/14/2003

AB The title manuf. involves **sintering** a source-material **mixt.** contg. a **CuO** powder having a sp. surface area of 30-100 m<sup>2</sup>/g to increase the crit. temp.

L23 ANSWER 28 OF 37 HCAPLUS COPYRIGHT 2003 ACS

AN 1991:483622 HCAPLUS

DN 115:83622

TI Lanthanide barium strontium cerium **copper** oxide superconductor and its manufacture

IN Wada, Takahiro; Ichinose, Ataru; Yaegashi, Yuji; Yamauchi, Hisao; Tanaka, Shoji

PA Zaidan Hojin Kokusai Chodendo Sangyo Gijutsu Kenkyu Center, Japan; Matsushita Electric Industrial Co., Ltd.; Central Research Institute of Electric Power Industry

SO Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	JP 03033013	A2	19910213	JP 1989-168923	19890629
PRAI	JP 1989-168923		19890629		

AB The title superconductor  $\text{Ln}(\text{Ba}_{1-x}\text{Sr}_x)\text{rCeCu}_9\text{O}_{30-z}$  ( $\text{Ln} = \text{Nd}, \text{Sm}, \text{and/or Eu}$ ;  $q + r + s = 12$ ,  $4.5 < q < 8.5$ ;  $1.5 < r < 5.5$ ;  $0.5 < s < 3.5$ ;  $0 < x < 0.85$ ) are prepd. from a **material mixt.**, which is **sintered** in O, heated, then O is absorbed in treatment in O at 300-700.degree.. A mixt. of  $\text{Nd}_2\text{O}_3$ ,  $\text{BaCO}_3$ ,  $\text{SrCO}_3$ ,  $\text{CeO}_2$ , and **CuO** was shaped, calcined in O, crushed, shaped, sintered in O, cooled, and treated at 400-600.degree. in O to give  $\text{Nd}_6(\text{Ba}_{0.5}\text{Sr}_{0.5})_4\text{Ce}_2\text{Cu}_9\text{O}_{30-z}$  showing superconductive transition temp. 35-40 K.

L23 ANSWER 29 OF 37 HCAPLUS COPYRIGHT 2003 ACS

AN 1990:563992 HCAPLUS

DN 113:163992

TI Preparation of calcined lead titanate zirconate powder

IN Kato, Yukihiro

PA Toyota Motor Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 4 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	JP 02137727	A2	19900528	JP 1988-286788	19881115
PRAI	JP 1988-286788		19881115		

AB In prepn. of calcined Pb titanate zirconate powder from an inorg. Pb source, a Zr source, and a Ti source by firing, at least a small amt. of .gtoreq.1 of Nb, Sb, Ta, and La which are added to the raw materials is supplied as an alkoxide. The obtained powder can be sintered at relatively low sintering temp., enabling sintering it with economical **Ag-Pd** alloy as an inner electrode in piezoelec. device fabrication. **PbO**,  $\text{ZrO}_2$ ,  $\text{TiO}_2$ , and  $\text{Nb}(\text{iso-OPr})_5$  were mixed in a desired mixing ratio, pulverized for 48 h, dewatered, dried, calcined, repulverized, and sintered at 1050-1250.degree. to give the title powder from which a Pb titanate zirconate was prepd. at lower sintering temp. than that prepd. without the alkoxide.

L23 ANSWER 30 OF 37 HCAPLUS COPYRIGHT 2003 ACS

AN 1989:607676 HCAPLUS

02/14/2003

DN 111:207676  
TI Magnesium titanate-based dielectric ceramics  
IN Niihara, Junji; Takatani, Minoru  
PA TDK Corp., Japan  
SO Jpn. Kokai Tokkyo Koho, 4 pp.  
CODEN: JKXXAF

DT Patent  
LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 01143104	A2	19890605	JP 1987-301348	19871128
PRAI	JP 1987-301348		19871128		

AB The title **materials** are **sintered mixts.** of 100 parts main component comprising MgTiO<sub>3</sub> (MgO/TiO<sub>2</sub> mol ratio 0.91-1.10) 100, **CuO** 1-30, and Mn oxides 0-5 (as MnO) parts and 5-200 parts glass. Ceramics having low dielec. const., high insulation resistance, and high Q values are prepd. at low sintering temp. MgO 83.8, TiO<sub>2</sub> 166.2, **CuO** 12.5, and MnCO<sub>3</sub> 2.5 g were kneaded with water and calcined to give powder, 100 parts of which was mixed with 100 parts lead aluminosilicate glass and a binder, screen-printed, and fired to give a capacitor having excellent dielec. characteristics.

L23 ANSWER 31 OF 37 HCAPLUS COPYRIGHT 2003 ACS

AN 1989:600526 HCAPLUS

DN 111:200526

TI Functional, reaction-sintered composite ceramic products, and their manufacture and uses

IN Yasutomi, Yoshiyuki; Miyoshi, Tadahiko; Sobue, Masahisa

PA Hitachi, Ltd., Japan

SO Eur. Pat. Appl., 15 pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 331160	A2	19890906	EP 1989-103646	19890302
	EP 331160	A3	19910605		
	EP 331160	B1	19940928		
	R: CH, DE, FR, GB, IT, LI, NL, SE				
	JP 01317157	A2	19891221	JP 1989-49844	19890303
	JP 2644876	B2	19970825		
	EP 504441	A1	19920923	EP 1991-104152	19910318
	EP 504441	B1	19960612		

R: DE, FR, GB

PRAI JP 1988-49544 19880304

AB The title ceramics consist of (a) particles and/or fibers of .gtoreq.1 functional inorg. materials having some of a piezoelec. function, dielec. character, magnetic character, heat conductive character, electron emissivity, catalytic activity, sensing function, and biol. function, and (b) a ceramic formed from metal particles during sintering. They are manufd. by shaping mixts. selected from the material described in (a) and particles of .gtoreq.1 of Group III, IV, V, VI, and VIII metals, and reaction sintering the greenware in a reactive gas to form the ceramics from the metals. The products comprise low-resistivity and high-permittivity materials comprising BiTiO<sub>3</sub> and Ti nitride, low-resistivity piezoelec. materials comprising PbTiO<sub>3</sub> and Cr nitride, low-resistivity catalysts comprising TiO<sub>2</sub> and reaction-sintered products of Ti, low-resistivity, electron-emissive materials comprising LaB<sub>6</sub> and reaction-sintered products of Si, multilayer circuit boards manufd. by

02/14/2003

forming reaction sintered products contg. cubic BN and Si oxide formed during firing, and provided with a wiring pattern, and laminating and sintering the assemblies, artificial bones and teeth comprising apatite and Al<sub>2</sub>O<sub>3</sub> and Ti nitride, resp., both formed during firing, temp. sensors comprising either CoO and reaction-sintered products of Ti, or FeO and TiN formed during firing, piezoelec. materials in which resistivity and piezoelec. character vary continuously or stepwise from place to place, and multilayer circuit boards comprising Al<sub>2</sub>O<sub>3</sub> and Si nitride formed during firing and provided with a wiring pattern. These conductive or resistive products have superior resistance to corrosion, heat, and oxidn., and high dimensional accuracy. A mixt. of polyethylene wax, other synthetic wax, and stearic acid 9 (each) and a mixt. of 30 wt.% Si (av. particle size 1 .mu.m) and 70 wt.% Fe (av. particle size 20 .mu.m) 100 wt. parts were kneaded at 160.degree. for 5 h, crushed, shaped at 160.degree. and 100 kg/cm<sup>2</sup>, and the resulting hollow cylinders were heated to 500.degree. at 3.degree./h in Ar, in N and stepwise to 800.degree. at 2.degree./min and to 1500.degree. while applying a magnetic field of 3000 G to give reaction-sintered products contg. 5 vol.% Si<sub>3</sub>N<sub>4</sub> whiskers, having dimensionally changed 0.8% during sintering, and having resistivity 3 .times. 10<sup>4</sup> .OMEGA.-m, magnetic flux d. 1000 G, and flexural strength 360 MPa.

L23 ANSWER 32 OF 37 HCAPLUS COPYRIGHT 2003 ACS

AN 1985:49816 HCAPLUS

DN 102:49816

TI **Sintered composite materials** for electric contacts

PA Siemens A.-G., Fed. Rep. Ger.

SO Jpn. Kokai Tokkyo Koho, 3 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 59173910	A2	19841002	JP 1984-19816	19840206
	JP 05086006	B4	19931209		
	EP 118717	B1	19860618	EP 1984-101010	19840201
	EP 118717	B2	19910220		
	R: AT, CH, DE, FR, GB, IT, LI, NL				
	AT 20506	E	19860715	AT 1984-101010	19840201
	US 4551301	A	19851105	US 1984-577748	19840207
PRAI	DE 1983-3305270		19830216		
	EP 1984-101010		19840201		

AB In the manuf. of sintered **Ag-SnO<sub>2</sub>-Bi<sub>2</sub>O<sub>3</sub>-CuO** composite materials for elec. contacts, 0.2-2% addnl. metal oxide (which sublimates in contact operation at a temp. lower than the **Ag** m.p.) is added. Thus, powd. **Ag-7.7 Sn-1 Bi-1% Cu** alloy powder was internally oxidized in air at 800.degree. to give powder having a compn. of **Ag-SnO<sub>2</sub>-Bi<sub>2</sub>O<sub>3</sub>-CuO**. The powder was mixed with 0.8% WO<sub>3</sub> in acetone, dried, compacted, and sintered to porosity <1.5%. An elec. contact from the molded body showed 25% less wear than that of **Ag-CdO** contact composite.

L23 ANSWER 33 OF 37 HCAPLUS COPYRIGHT 2003 ACS

AN 1976:513785 HCAPLUS

DN 85:113785

TI Electrodes for corrosion prevention

IN Yokoyama, Isao; Makino, Motohiko; Awaji, Syun; Saito, Shunjiro; Yokoyama, Mitsunobu; Miyama, Haruo

PA TDK Electronics Co., Ltd., Japan

02/14/2003

SO Ger. Offen., 17 pp.

CODEN: GWXXBX

DT Patent

LA German

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 2546937	A1	19760513	DE 1975-2546937	19751020
	DE 2546937	B2	19791004		
	DE 2546937	C3	19800612		
	JP 51047552	A2	19760423	JP 1974-122120	19741023
	JP 55014875	B4	19800419		
PRAI	JP 1974-122120		19741023		

AB Anodes for cathodic corrosion prevention consist of a **sintered material** of a **mixt.** of (1) an Fe oxide 55-90 (calcd. as Fe<sub>2</sub>O<sub>3</sub>); and (2) a metal oxide (MO) 10-45 mole %, where M is Mn, Ni, Co, Mg, Cu and/or Zn. For example, Fe<sub>2</sub>O<sub>3</sub> and **NiO** were mixed in various ratios (95:5 to 55:45), then preheated at 800.degree. for 3 hr and cooled. The mixt. was then pulverized to a particle size <20 .mu.m, and pressed at 1 ton/cm<sup>2</sup> to form an anode of dimensions 110 .times. 15 .times. 15 mm. The anode was then heated in N for 5 hr at 1440.degree., then cooled slowly in N for 10 hr to form the desired sintered anode. The elec. resistance and corrosion rate of the sintered anodes were measured, the latter during electrolysis in std. sea water at c.d. 5 A/dm<sup>2</sup>, temp. of soln. 30 .+-. 1.degree. for 4 hr, with anode surface 0.25 dm<sup>2</sup>, Pt grid cathode 100 .times. 200 .times. 1.0 mm, and distance between electrodes 5 cm. The thermal impact strength of each sintered anode as evaluated by heating them 1st for 3 min in hot water (98.degree.), then immersing them in cold water (5.degree.) for 3 min, and repeating this cycle until the sintered anode shattered. The best results were shown by the 55:45 (Fe<sub>2</sub>O<sub>3</sub>/**NiO**) mixt. which had an elec. resistance of 0.30 .OMEGA.-cm, corrosion rate 1.35 mg/dm<sup>2</sup>, and thermal impact strength resisting 250 heating /cooling cycles.

L23 ANSWER 34 OF 37 HCAPLUS COPYRIGHT 2003 ACS

AN 1975:507408 HCAPLUS

DN 83:107408

TI **Sintered composite magnetic materials**

IN Wako, Toshio; Itami, Teruhiko; Hiraga, Masatoshi

PA Tohoku Metal Industries, Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 3 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 50009798	A2	19750131	JP 1973-60817	19730601
PRAI	JP 1973-60817		19730601		

AB A composite magnetic material with good abrasion resistance is obtained by dispersing a high permeability ferrite .ltoreq.7 vol. % in an alloy contg. **Al** 4-9, Si 6-12 wt. %; and remainder Fe. These materials are useful as magnetic head core materials. Thus, sintered Ni, Zn ferrite (Fe<sub>2</sub>O<sub>3</sub> 50, **NiO** 18, ZnO 32 mole %, .apprx.300 mesh) 2 vol. % was added to a powd. (.apprx.200 mesh) alloy contg. **Al** 5.5, Si 9.5, remainder Fe, and the mixt. was sintered by heating at 1300.degree. for 1 hr in a N atm. at 600 kg/cm<sup>2</sup> pressure. A photomicrograph showed the presence of ferrite finely distributed between Sendust (**Al** 5, Si 10%, remainder Fe) granules. The material of porosity 4% was shaped into a ring (outer diam. 10, inner diam. 6, and thickness 1 mm) and annealed by heating at 800.degree. for 1 hr. This material showed .mu.iac at 1 kHz



02/14/2003

750, at 100 kHz 60; B15 8.3 kG; d. 6.7 g/cm<sup>3</sup>, and Vicker's hardness 520. When a 0.2 .times. 26 mm surface was allowed to remain in contact for 200 hr with a CrO<sub>2</sub> magnetic tape moving at 10 m/sec, the abrasion loss of the magnetic head was only 32 .mu..

L23 ANSWER 35 OF 37 HCAPLUS COPYRIGHT 2003 ACS

AN 1966:461214 HCAPLUS

DN 65:61214

OREF 65:11415c-f

TI Reactions and phase transitions in the Cu-Mn-ferrite system

AU Peloschek, H. P.

CS N. V. Philips' Gloeilampenfabrieken, Eindhoven, Neth.

SO Intern. Symp. Reactivity Solids, 5th, Munich (1965), Volume Date 1964  
549-58, discussion 558-61

DT Journal

LA English

AB The reactions occurring during the heating of mixts. of **CuO**, **MnCO<sub>3</sub>**, and **Fe<sub>2</sub>O<sub>3</sub>** were studied by using thermogravimetric analysis (TGA) and by analysis of the shrinkage of pressed pellets during heating, viz., thermal sinter analysis (TSA). The TGA of **Mn-CO<sub>3</sub>**, **CuO**, **MnFe<sub>2</sub>O<sub>4</sub>**, **Cu<sub>0.1</sub>Mn<sub>0.9</sub>Fe<sub>2</sub>O<sub>4</sub>**, and **CuFe<sub>2</sub>O<sub>4</sub>** are shown along with the TSA of 3 types of **Fe<sub>2</sub>O<sub>3</sub>**, **MnCO<sub>3</sub>**, **CuO**, **Cu<sub>0.1</sub>Mn<sub>0.9</sub>Fe<sub>2</sub>O<sub>4</sub>**, **CuFe<sub>2</sub>O<sub>4</sub>**, and **MnFe<sub>2</sub>O<sub>4</sub>**. The method of interpretation of the results is explained for **MnFe<sub>2</sub>O<sub>4</sub>**. By using these results and data in the literature a model of a phase diagram for the compns. **MnxFe<sub>3</sub>-xO<sub>4</sub>** is shown. In the absence of x-ray diffraction it was not possible to obtain a complete phase diagram for the compns. of formula **CuxMn<sub>1-x</sub>Fe<sub>2</sub>O<sub>4</sub>**. However, a temp.-reaction diagram has been plotted which shows a region of reactions, a region of spinel phase, and a region of decompn. Small addns. of **CuO** to compns. consisting of **Mn<sub>2</sub>O<sub>3</sub>** and **Fe<sub>2</sub>O<sub>3</sub>** cause lowering of all reaction temps. In the discussion, the dilatometric and thermogravimetric diagrams of 4 presintered samples within the spinel region **CuOxMnOy-FeOz** are given. TSA is a potential method for specifying the **sinter** reactivity of raw **materials** and **mixts**.

L23 ANSWER 36 OF 37 JAPIO COPYRIGHT 2003 JPO

AN 2002-097070 JAPIO

TI COMPOSITE SEMICONDUCTING CERAMIC MATERIAL AND ITS PRODUCTION METHOD

IN KITAHARA NAOTO; YAGIO KOJI

PA MITSUBISHI MATERIALS CORP

PI JP 2002097070 A 20020402 Heisei

AI JP 2000-287916 (JP2000287916 Heisei) 20000922

PRAI JP 2000-287916 20000922

SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2002

AB PROBLEM TO BE SOLVED: To form internal electrodes comprising 100%

**Ag** and increase B constant even in sintering at temperatures  
<=960&deg;C under atmospheric conditions.

SOLUTION: The **material** is a **composite sintered**

compact 11 of a semiconducting ceramic material having a spinel structure comprising >=2 kinds of metal oxides selected from **MnO**, **CoO**, **NiO**

, **CuO**, **Fe<sub>2</sub>O<sub>3</sub>**, and **Al<sub>2</sub>O<sub>3</sub>** and a magnetic ceramic material

comprising **Ni-Zn-Cu**-based ferrite. The semiconducting ceramic material is powder calcined or sintered at temperatures from 100&deg;C lower than its sintering temperature to its sintering temperature and the magnetic

ceramic material is powder calcined at 700-800&deg;C. The composite material contains the calcined magnetic ceramic powder of 40-60 vol.% as a matrix component and the calcined or sintered semiconducting ceramic

powder as aggregate for the rest.

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L23 ANSWER 37 OF 37 JAPIO COPYRIGHT 2003 JPO

02/14/2003

AN 1991-097655 JAPIO  
TI PRODUCTION OF SINTERED BODY OF PEROVSKITE TYPE **COPPER**-CONTAINING  
OXIDE SUPERCONDUCTOR  
IN HASEYAMA HIDEETSU; KAWAZU KOICHI  
PA DOWA MINING CO LTD  
PI JP 03097655 A 19910423 Heisei  
AI JP 1989-232459 (JP01232459 Heisei) 19890907  
PRAI JP 1989-232459 19890907  
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1991  
AB PURPOSE: To obtain a sintered body of a perovskite type oxide  
superconductor having a satisfactorily high critical temp. by sintering a  
mixture of **CuO** powder whose principal **CuO** particles  
have a prescribed specific surface area with other starting materials.  
CONSTITUTION: When **CuO** powder is mixed with other starting  
**materials** and this **mixture** is **sintered** to  
produce a sintered body of a perovskite type Cu- contg. oxide  
superconductor, the **CuO** powder is so regulated that the  
principal **CuO** particles have 30-100m<sup>2</sup>/g specific  
surface area. A uniform reaction is performed at the time of sintering and  
no unreacted material is left. The resulting sintered body has a nearly  
single high-temp. phase structure and a higher critical temp. than the  
conventional sintered body. The oxide superconductor may be TlBaCaCuO  
(Tl-contg. oxide).  
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FILE 'REGISTRY'

L1 291 S (CU AND O)/ELS AND 2/ELC.SUB  
 L2 0 S CU/CN  
 L3 1 S COPPER/CN  
 L4 1 S CUPROUS OXIDE/CN  
 L5 4 S AU/CN OR GOLD/CN  
 L6 6 S AG/CN OR SILVER/CN  
 L7 7 S AL/CN OR ALUMINIUM/CN OR ALUMINUM/CN  
 L8 107 S (SN AND O)/ELS AND 2/ELC.SUB OR TIN  
 OXIDE/CN  
 L9 90 S (PB AND O)/ELS AND 2/ELC.SUB OR LEAD  
 OXIDE/CN  
 L10 243 S (NI AND O)/ELS AND 2/ELC.SUB OR NICKEL  
 OXIDE/CN

FILE 'HCAPLUS'

L11 1023381 S CU OR COPPER OR L1  
 L12 36266 S CUPROUS(W)OXIDE OR CU2O OR L4 OR L1  
 L13 50867 S (COMPOSITE OR MIXTURE)(2A)(MATERIAL)  
 L14 49233 S THERMAL(W)EXPANSION  
 L15 65009 S THERMAL(W)CONDUCTIV?  
 L16 465636 S GOLD OR AU OR L5  
 L17 426262 S SILVER OR AG OR L6  
 L18 1238091 S AL OR ALUMINIUM OR ALUMINUM OR L7  
 L19 45109 S TIN(W)OXIDE OR SNO OR SN(W)O OR EPS(W)6 OR  
 NALCO OR SNS 10T OR STANNOXYL OR TIXOLEX OR L8  
 L20 28361 S LEAD(W)OXIDE OR PIGMENT(W)YELLOW OR  
 LEAD(W)MONOXIDE OR LEAD(W)PROTOXIDE OR LEAD(W)OXIDE  
 OR  
 LITHARGE OR LITHARGE(W)YELLOW OR PIGMENT(W)YELLOW OR  
 PLUMBOUS  
 OXIDE OR YELLOW(W)LEAD(W)OCHER OR L9  
 L21 45976 S NICKEL(W)OXIDE OR NIO OR NI(W)O OR  
 MONONICKEL(W)OXIDE OR NICKEL(W)MONOXIDE OR NICKEL  
 MONOXIDE OR  
 NICKEL(W) OXIDE OR NICKEL(W)OXIDE OR NICKELOUS(W)OXIDE  
 OR L10  
 L22 33966 S L11 AND L12  
 L23 49233 S THERMAL(W)EXPANSION  
 L24 332 S L22 AND L14  
 L25 18 S L24 AND L15  
 L26 1204 S L22 AND COEFFICIENT  
 L27 25 S L26 AND L15  
 L28 138 S L22 AND L15  
 L29 55 S L28 AND (TEMPERATURE OR TEMP)  
 L30 3 S L29 AND L13

L31 215 S L22 AND L13  
 L32 58 S L31 AND (TEMPERATURE OR TEMP)  
 L33 218669 S SINTER? OR CRUST  
 L34 16 S L33 AND L32  
 L35 2179 S L22 AND L33  
 L36 40 S L35 AND L13  
 L37 48 S L25 OR L27 OR L30 OR L34  
 L38 64459 S ((L16 OR L17 OR L18) OR L11) AND (L12 OR  
 (L19 OR L20 OR L21))  
 L39 4432 S L38 AND L33  
 E PLASTIC/CT  
 E PLASTICS/CT  
 E E3+ALL/CT  
 L40 25 S ("MULLINS SOFTENING EFFECT"/CT OR RESINIFIC  
 ATION/CT OR ORGANOSOLS/CT OR PLASTISOLS/CT OR  
 PLASTOMERS/CT OR  
 "SYNTHETIC RESINS"/CT)  
 L41 397833 S PLASTIC  
 L42 52 S L39 AND (L40 OR L41)  
 L43 50 S L42 NOT L37  
 L44 21 S L36 NOT (L25 OR L27 OR L30 OR L34 OR L42  
 OR L37)  
 L45 119 SEA ABB=ON PLU=ON L25 OR L27 OR L30 OR L34 OR L42 OR L37  
 OR  
 L36  
 SEL PN  
 L46 93 SEA ABB=ON PLU=ON (EP212659/PN OR DE10002812/PN OR  
 DE2440964/  
 PN OR DE2445075/PN OR EP1036849/PN OR EP121161/PN OR  
 EP260826/P  
 N OR EP302791/PN OR EP308326/PN OR EP406580/PN OR EP545205/PN  
 OR EP713930/PN OR US5492653/PN OR US5658499/PN OR AT164892/PN  
 OR AU9935955/PN OR BE774365/PN OR CA1255491/PN OR  
 CA1304068/PN  
 OR CA1325713/PN OR CA1326349/PN OR CA972344/PN OR  
 CN1050011/PN  
 OR CN1058741/PN OR CN1059619/PN OR CN1071279/PN OR  
 CN1093565/PN  
 OR CN1093846/PN OR CN1134962/PN OR CN1250671/PN OR  
 CN1265384/P  
 N OR CN1320378/PN OR CS157418/PN OR DE19841574/PN OR  
 DE19841664  
 /PN OR DE4009956/PN OR DE4140118/PN OR DE4201940/PN OR  
 DK171038/PN OR DK173647/PN OR DK8704709/PN OR EP1058247/PN  
 OR  
 EP1085953/PN OR EP1098299/PN OR EP1167559/PN OR ES2067287/PN

OR ES2115306/PN OR FI9505353/PN OR FR2113089/PN OR  
GB1349400/PN

OR GB1536847/PN OR IL79878/PN OR IN140966/PN OR JP01012404/PN  
OR JP01028250/PN OR JP01143104/PN OR JP01152007/PN OR JP0117243  
3/PN OR JP02028234/PN OR JP02060110/PN OR "JP03021108 B4"/PN  
OR "JP03021109 B4"/PN OR "JP03021110 B4"/PN OR JP03097655/PN  
OR JP04021739/PN OR "JP04060080 B4"/PN OR "JP04069592 B4"/PN  
OR "JP04077691 B4"/PN OR "JP05065452 B4"/PN OR JP05254844/PN  
OR JP05308193/PN OR JP07003303/PN OR "JP07024242 B4"/PN OR  
JP07026031/PN OR JP07235226/PN OR JP07503097/PN OR "JP08025804  
B4"/PN OR JP08127829/PN OR JP09077949/PN OR JP09171908/PN OR  
JP10208923/PN OR JP11006022/PN OR JP11178899/PN OR JP11277152/P  
N OR JP2000239061/PN OR JP2000247735/PN OR JP2000265227/PN OR  
JP2000311973/PN OR JP2000313904/PN OR JP2000313905/PN OR  
JP2000343820/PN OR JP2001189325/PN OR JP2001195722/PN OR  
JP2001196513/PN OR JP2001210769/PN OR JP2001313356/PN OR  
JP2001332129/PN OR JP2002038204/PN OR JP2002097070/PN OR  
JP2002121068/PN OR JP2002212651/PN OR JP2002270745/PN OR  
JP2002276665/PN OR JP2002314013/PN OR "JP2833706 B2"/PN OR  
JP50045023/PN OR JP50048012/PN OR JP50058137/PN OR JP50061432/P  
N OR JP50061433/PN OR "JP52017532 B4"/PN OR "JP52017533 B4"/PN  
OR "JP53035767 B4"/PN OR JP53092308/PN OR JP54140169/PN OR  
"JP59013578 B4"

02/13/2003

L37 ANSWER 1 OF 48 HCAPLUS COPYRIGHT 2003 ACS

AN 2002:812367 HCAPLUS

DN 137:332066

TI Heat spreader and its fabrication

IN Hori, Makoto; Suzumura, Takashi

PA Hitachi Cable, Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 10 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002314013	A2	20021025	JP 2001-115824	20010413
PRAI	JP 2001-115824		20010413		

AB A heat spreader for releasing a heat from a heat source such as a semiconductor device comprises a heat-receiving layer of a sintered mixt. from a metal powder having a high **thermal cond.** and inorg. powder having a **thermal expansion coeff** . lower than the metal powder for receiving a heat from the heat source and a heat-spreading layer which has a fin and made from a sintered mixt. of the metal powder having a high **thermal cond.** and inorg. powder having a **thermal expansion coeff** . lower than the metal powder. Specifically, the metal powder may comprise **Cu** and the inorg. powder may comprise **Cu<sub>2</sub>O**. Addnl., the heat-receiving layer may have a coating or plating layer of Sn, Pb, Bi, Zn, Al, **Cu**, or Ni. A method for fabricating the above spreader is also described. The spreader has a low thermal stress.

L37 ANSWER 2 OF 48 HCAPLUS COPYRIGHT 2003 ACS

AN 2002:714594 HCAPLUS

DN 137:256252

TI Manufacture of fin-incorporated heat dispersing materials

IN Hori, Makoto; Suzumura, Takashi

PA Hitachi Cable, Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 10 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002270745	A2	20020920	JP 2001-68837	20010312
PRAI	JP 2001-68837		20010312		

AB The title heat dispersing materials comprise heat receiving layers from the sintered mixts. of thermally conductive metal powders and inorg. compd. powders having lower **thermal expansion rate** than the metals, and V-shaped heat dispersing fins from sintered powders which have greater **thermal cond.** than the mixts. The heat receiving layers and the fins are unified by simultaneous sintering. The heat dispersing materials are attached to insulator plates on which semiconductor devices are placed.

L37 ANSWER 3 OF 48 HCAPLUS COPYRIGHT 2003 ACS

AN 2002:568243 HCAPLUS

DN 137:128319

TI **Copper** composites with porous ceramics

IN Tung, Ching Pin; Kotoku, Koichi

PA Hitachi Cable, Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 3 pp.

02/13/2003

CODEN: JKXXAF

DT Patent  
LA Japanese  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002212651	A2	20020731	JP 2001-1900	20010109
PRAI	JP 2001-1900		20010109		

AB The composites use porous ceramics prepd. by firing inorg. materials having **thermal expansion coeff.** lower than **Cu** and are obtained by impregnating the ceramics with **Cu** alloys contg. predetd. amt. of O. The ceramics may be Si<sub>3</sub>N<sub>4</sub>, SiC, AlN, and/or Al<sub>2</sub>O<sub>3</sub>. The composites have low **thermal expansion** and high **thermal cond.** and are suitable for heat radiation plates of semiconductor devices.

L37 ANSWER 4 OF 48 HCAPLUS COPYRIGHT 2003 ACS

AN 2002:403884 HCAPLUS

DN 136:405618

TI Low **temperature sintered** Bi<sub>2</sub>O<sub>3</sub>-ZnO-Nb<sub>2</sub>O<sub>5</sub> dielectric ceramic and method for synthesis

IN Chen, San-Yuan; Lin, Yih-Jaw

PA National Science Council, Taiwan

SO U.S., 19 pp.

CODEN: USXXAM

DT Patent  
LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6395663	B1	20020528	US 2000-595812	20000616
PRAI	US 2000-595812		20000616		

AB A dielec. ceramic material is provided. The ceramic **material** includes a **mixt.** represented by the formula of Bi<sub>2-x</sub> (Zn<sub>2/3</sub> Nb<sub>4/3</sub>) O<sub>7-3x/2</sub> (BZN), 0.1 to 0.67, and a flux having an eutectic compn. for lowering the **sintering temp.** of the mixt. from 950 to 1100 degree. to 800 to 850 degree.. The dielec. material has a dielec. const. >45 (tan δ < 0.05) and a quality factor >1200 (or Q > 4500) at 3.5 GHz.

RE.CNT 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE.FORMAT

L37 ANSWER 5 OF 48 HCAPLUS COPYRIGHT 2003 ACS

AN 2002:301713 HCAPLUS

DN 136:318009

TI Manufacture of superfine barium titanate dielectric ceramics by low-**temperature sintering**

IN Kim, Kook Byun; Kim, Jin San

PA Korea Institute of Science and Technology, S. Korea

SO Jpn. Kokai Tokkyo Koho, 9 pp.

CODEN: JKXXAF

DT Patent  
LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002121068	A2	20020423	JP 2000-338252	20001106
PRAI	KR 2000-54228	A	20000915		
	KR 2000-55161	A	20000920		
	KR 2000-56463	A	20000926		

AB The dielec. ceramics are manufd. by (i) ball-milling raw **material**

02/13/2003

**mixts.** of high-purity BaTiO<sub>3</sub>, .ltoreq.0.05 part **Cu** oxide, and .ltoreq.0.05 part RE<sub>2</sub>O<sub>3</sub> (RE = La, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, and/or Yb), calcining and molding the thus-prepd. slurries, and **sintering** the moldings in O atm. The calcination may be carried out at 900-1100.degree. for 0.5-2 h. The ceramics have high d. and are esp. useful for multilayer capacitors.

L37 ANSWER 6 OF 48 HCAPLUS COPYRIGHT 2003 ACS

AN 2002:247715 HCAPLUS

DN 136:287621

TI Composite-type semiconductor ceramics and their manufacture

IN Kitahara, Naoto; Yanao, Koji

PA Mitsubishi Materials Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002097070	A2	20020402	JP 2000-287916	20000922
PRAI	JP 2000-287916		20000922		

AB The title semiconductor ceramics are formed by mixing and firing a mixt. contg. spinel-type semiconductor materials consisting of MnO, CoO, NiO, CuO, Fe<sub>2</sub>O<sub>3</sub> and/or Al<sub>2</sub>O<sub>3</sub>, and 40-60 vol% of a magnetic material based on Ni-Zn-Cu type ferrite, where the semiconductor materials are **sintered** at T or T - 100.degree. (T is the **sintering temp.**), and the magnetic materials are fired at 700-800.degree.. Preferably, the semiconductor materials have av. particle size 1-10 .mu.m, and the magnetic materials have av. particle size <1 .mu.m. The ceramics are esp. suitable semiconductor devices such as NTC thermistors.

L37 ANSWER 7 OF 48 HCAPLUS COPYRIGHT 2003 ACS

AN 2002:205339 HCAPLUS

DN 136:302557

TI Noble high **thermal conductivity**, low **thermal expansion Cu-Cu<sub>2</sub>O** composite base plate technology for power module application

AU Saito, R.; Kondo, Y.; Koike, Y.; Okamoto, K.; Suzumura, T.; Abe, T.

CS Hitachi Research Laboratory, Hitachi Ltd., Ibaraki, 319-1292, Japan

SO ISPSD'01, Proceedings of the International Symposium on Power Semiconductor Devices and ICs, 13th, Osaka, Japan, June 4-7, 2001 (2001), 51-54 Publisher: Institute of Electrical and Electronics Engineers, New York, N. Y.

CODEN: 69CIIB; ISBN: 4-88686-056-7

DT Conference

LA English

AB Noble high **thermal cond.** and low **thermal expansion Cu-Cu<sub>2</sub>O** composite base plate was developed and successfully applied to power modules. Metal matrix composite consists of **Cu** and **Cu** oxide was demonstrated to show excellent combination of **thermal cond.** and **thermal expansion**. This noble **Cu-Cu<sub>2</sub>O** base plate was applied to power module, and high reliability and high **thermal cond.** of the module were confirmed. Anisotropic thermal property of **Cu-Cu<sub>2</sub>O** base plate by controlling the microstructure of composite was also demonstrated.

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L37 ANSWER 8 OF 48 HCAPLUS COPYRIGHT 2003 ACS



02/13/2003

AN 2002:98837 HCAPLUS  
DN 136:138226  
TI Production of cermets with low **thermal expansion**  
suitable for heat sinks for semiconductor devices  
IN Kuroki, Kazuma; Fukuda, Kunihiro; Fuyu, Yoshihira; Suzumura, Takashi;  
Hori, Makoto; Nomoto, Akira  
PA Hitachi Cable, Ltd., Japan  
SO Jpn. Kokai Tokkyo Koho, 4 pp.  
CODEN: JKXXAF

DT Patent  
LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002038204	A2	20020206	JP 2000-225587	20000726
PRAI	JP 2000-225587		20000726		

AB In prodn. of the cermets by sintering mixts. of metal powder with high **thermal cond.** and inorg. powder with low **thermal expansion coeff.**, the mixts. are molded, sintered, and then hot pressed. The cermets are free from internal pores.

L37 ANSWER 9 OF 48 HCAPLUS COPYRIGHT 2003 ACS

AN 2001:652970 HCAPLUS  
DN 135:184034  
TI Manufacture of **composite materials** for heat exchangers  
IN Barabanova, O. A.; Mitin, B. S.  
PA Zakrytoe Aktsionernoe Obshchestvo "Alarm", Russia  
SO Russ., No pp. given  
CODEN: RUXXE7

DT Patent  
LA Russian

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	RU 2149087	C1	20000520	RU 1999-105350	19990324
PRAI	RU 1999-105350		19990324		

AB The **composite material** consists of metallic plates assembled with intermediate spacers and is produced by joining the plates together by diffusion welding at increased **temps.** under the pressure from 0.2 MPa to  $P.\sigma.0.2$ , where  $P.\sigma.0.2$  is the yield strength of metallic plates. The intermediate spacers are made of lead oxide glass (65-74% PbO) contg. also oxides of boron, zinc, silicon, antimony, bismuth, magnesium, and aluminum. In the embodiments, **composite materials** with increased strength and decreased **thermal cond.** were made using aluminum alloy and **copper** as base plates.

L37 ANSWER 10 OF 48 HCAPLUS COPYRIGHT 2003 ACS

AN 2001:566694 HCAPLUS  
DN 135:130998  
TI Reliable semiconductor package with enhanced **thermal conductivity** from **copper-cuprous oxide** composite

IN Hisano, Nae; Miura, Hideo  
PA Japan  
SO U.S. Pat. Appl. Publ., 10 pp.  
CODEN: USXXCO

DT Patent  
LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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02/13/2003

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2001010394	A1	20010802	US 2001-767720	20010124
	US 6376905	B2	20020423		
	TW 476987	B	20020221	TW 2001-90100048	20010102
PRAI	JP 2000-24693	A	20000128		

AB A resin encapsulated semiconductor package, which uses leads (lead frame), and enhances heat conducting properties and prevents breaking of lengths of bonding wire, redn. in service life of solder joints and crack of a resin while ensuring reliability on strength. A lead material uses a material contg. as a main constituent material a composite alloy of **Cu<sub>2</sub>O** and **Cu**, which has a **thermal cond** . as high as that of **Cu** alloys having been conventionally used, and which is sintered to have a small linear expansion **coeff.** as compared with such **Cu** alloys.

L37 ANSWER 11 OF 48 HCAPLUS COPYRIGHT 2003 ACS

AN 2001:564246 HCAPLUS

DN 135:130852

TI Semiconductor devices with heat spreaders

IN Yoneda, Nae; Miura, Hideo

PA Hitachi Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001210769	A2	20010803	JP 2000-24694	20000128
PRAI	JP 2000-24694		20000128		

AB The materials of the heat spreaders are sintered composites of **Cu<sub>2</sub>O** and **Cu**, which have as high **thermal cond.** as and smaller linear expansion **coeff.** than **Cu**.

L37 ANSWER 12 OF 48 HCAPLUS COPYRIGHT 2003 ACS

AN 2001:547950 HCAPLUS

DN 135:98847

TI Material for oxygen electrode in electrochemical devices

IN Gil'derman, V. K.

PA Institut Vysokotemperaturnoi Elektrokhemii Ural'skogo Otdeleniya RAN, Russia

SO Russ., No pp. given

CODEN: RUXXE7

DT Patent

LA Russian

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	RU 2146360	C1	20000310	RU 1997-109771	19970610
PRAI	RU 1997-109771		19970610		

AB The invention relates to high- **temp.** electrochem. devices with solid oxide electrolyte and material of invention can be used as oxygen electrode in electrochem. oxygen transducers, oxygen pumps, electrolyzers, and fuel cells. Invention provides electrode material with laminar perovskite structure showing good conductance at high **temps.** Material contains cobalt, **copper**, yttrium, and barium oxides according to following formula:  $YBa_2(Cu_{1-x}Co_x)O_{6+\delta}$ . wherein  $x = 0.6-0.8$  and  $\delta = 0.0-1.0$ .

L37 ANSWER 13 OF 48 HCAPLUS COPYRIGHT 2003 ACS

02/13/2003

AN 2001:521245 HCAPLUS  
DN 135:115484  
TI Composite materials for heat-dispersing substrates of semiconductor devices  
IN Watabe, Sukeyuki; Okamoto, Kazutaka; Kondo, Yasuo; Abe, Terunobu; Aono, Yasuhisa; Kaneda, Junya  
PA Hitachi Ltd., Japan  
SO Jpn. Kokai Tokkyo Koho, 17 pp.  
CODEN: JKXXAF  
DT Patent  
LA Japanese  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001196513	A2	20010719	JP 2000-9969	20000113
PRAI	JP 2000-9969		20000113		

AB The materials comprise metals and particulate or rod-like inorg. compds. contg. **Cu<sub>2</sub>O** 10-55 vol.% and **Cu** balance, and having **thermal expansion coeff.** of 5 .times. 10<sup>-6</sup> .apprx. 17 .times. 10<sup>-6</sup>/.degree.C and **thermal cond.** of 100-380 W/m.bul.K.

L37 ANSWER 14 OF 48 HCAPLUS COPYRIGHT 2003 ACS

AN 2001:496471 HCAPLUS  
DN 135:100960  
TI Power module.  
IN Suzuki, Kiyomitsu; Yamada, Ichiji; Abe, Teruyoshi; Kondo, Yasuo; Okamoto, Kazutaka; Watabe, Sukeyuki; Aono, Yasuhisa  
PA Hitachi Ltd., Japan  
SO Jpn. Kokai Tokkyo Koho, 14 pp.  
CODEN: JKXXAF  
DT Patent  
LA Japanese  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001189325	A2	20010710	JP 1999-372681	19991228
PRAI	JP 1999-372681		19991228		

AB In a power module having a semiconductor device mounted on a conductor component partially sealed with a resin, the conductor component comprises a **Cu** composite contg. **Cu** oxide. The module has a low **thermal expansion** and high **thermal cond.**

L37 ANSWER 15 OF 48 HCAPLUS COPYRIGHT 2003 ACS

AN 2000:861105 HCAPLUS  
DN 134:23578  
TI Information recording medium and information recording device  
IN Yamamoto, Hiroki; Naito, Takashi; Takahashi, Ken; Hosaka, Sumio; Terao, Motoyasu; Kirino, Fumiyoshi; Koyama, Eiji; Kuramoto, Hiroki  
PA Hitachi, Ltd., Japan  
SO Eur. Pat. Appl., 29 pp.  
CODEN: EPXXDW  
DT Patent  
LA English  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1058247	A1	20001206	EP 2000-111094	20000605

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO

02/13/2003

JP 2000343820 A2 20001212 JP 1999-157479 19990604  
PRAI JP 1999-157479 A 19990604

AB An information recording medium has a Co-Si oxide thin film constructed such that columnar crystals are sepd. by an intergranular phase which contains SiO<sub>2</sub> having a lower **coeff. of thermal cond.** than the columnar crystals. Therefore, the intergranular phase prevents heat transfer from one columnar crystal to another. In addn., the intergranular phase separates columnar crystal from each other, so that the cryst. structure of each columnar crystal is not affected by its adjacent columnar crystal. The advantage of such construction is that the columnar crystals do not undergo phase transformation except for those which were given energy necessary for phase transformation directly from the laser beam and hence columnar crystals overheated by the laser beam do not affect their adjacent columnar crystals. Thus it is possible to accurately form recording pits whose mark length is smaller than the laser beam diam.

RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L37 ANSWER 16 OF 48 HCAPLUS COPYRIGHT 2003 ACS

AN 2000:803880 HCAPLUS

DN 133:338625

TI Composite material, manufacture thereof, and semiconductor device

IN Kaneda, Junya; Kondo, Yasuo; Okamoto, Kazutaka; Abe, Teruyoshi; Aono, Yasuhisa

PA Hitachi, Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 15 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000313904	A2	20001114	JP 1999-121280	19990428
PRAI	JP 1999-121280		19990428		

AB A composite is manufd. by mixing a metal powder and an inorg. material powder having **thermal expansion coeff.** lower than that of the metal and passing the mixt. between the rolls, thereby subjecting the mixt. to plastic processing simultaneously with sintering. Preferably, 50-95% of the inorg. particles are connected to each other, forming lumps of irregular shape. The composite with high **thermal cond.**, low **thermal expansion coeff.**, and high plastic processibility is suitable, e.g., for heat sinks of semiconductor devices.

L37 ANSWER 17 OF 48 HCAPLUS COPYRIGHT 2003 ACS

AN 2000:781208 HCAPLUS

DN 133:358096

TI Composite materials and semiconductor devices

IN Kondo, Yasuo; Okamoto, Kazutaka; Kaneda, Junya; Abe, Teruyoshi; Aono, Yasuhisa

PA Hitachi, Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000311973	A2	20001107	JP 1999-121284	19990428
PRAI	JP 1999-121284		19990428		

02/13/2003

AB Composite Cu and CuO particles have excellent **thermal cond.**, low **thermal expansion** rate and plasticity for semiconductor devices.

L37 ANSWER 18 OF 48 HCAPLUS COPYRIGHT 2003 ACS  
AN 2000:665644 HCAPLUS  
DN 133:226304

TI Metal matrix **composite material**, process for its production and use

IN Okamoto, Kazutaka; Kondo, Yasuo; Abe, Teruyoshi; Aono, Yasuhisa; Kaneda, Junya; Saito, Ryuichi; Koike, Yoshihiko

PA Hitachi, Ltd., Japan

SO Eur. Pat. Appl., 27 pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	EP 1036849	A2	20000920	EP 2000-104647	20000303
	EP 1036849	A3	20020925		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 2000265227	A2	20000926	JP 1999-69540	19990316
	US 2002135061	A1	20020926	US 2002-101852	20020321
	US 2002145195	A1	20021010	US 2002-101851	20020321
PRAI	JP 1999-69540	A	19990316		
	US 2000-513330	A3	20000225		

AB Provided is a **composite material** excellent in plastic workability, a method of producing the **composite material**, a heat-radiating board of a semiconductor equipment, and a semiconductor equipment to which this heat-radiating board is applied. This **composite material** comprises a metal and an inorg. compd. formed to have a dendritic shape or a bar shape. In particular, this **composite material** is a **copper composite material**, which comprises 10 to 55 vol.% **cuprous oxide** (Cu<sub>2</sub>O) and the balance of **copper** (Cu) and incidental impurities and has a **coeff. of thermal expansion** in a **temp.** range from a room **temp.** to 300.degree.C of from 5 .times. 10<sup>-6</sup> to 17 .times. 10<sup>-6</sup>/.degree.C and a **thermal cond.** of 100 to 380 W/m .cntdot.k. This **composite material** can be produced by a process comprising the steps of melting, casting and working and is applied to a heat-radiating board of a semiconductor article.

L37 ANSWER 19 OF 48 HCAPLUS COPYRIGHT 2003 ACS  
AN 2000:623502 HCAPLUS  
DN 133:226689

TI Preparation of compositions and use in low **temperature sintering** process for production of dielectric porcelain

IN Sugimoto, Yasutaka

PA Murata Mfg. Co., Ltd., Japan

SO Ger. Offen., 10 pp.

CODEN: GWXXBX

DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	DE 10002812	A1	20000907	DE 2000-10002812	20000124

02/13/2003

DE 10002812	C2	20021121		
JP 2000247735	A2	20000912	JP 1999-52878	19990301
US 6270716	B1	20010807	US 1999-451736	19991130
CN 1265384	A	20000906	CN 1999-127502	19991222
CN 1093846	B	20021106		
PRAI JP 1999-52878	A	19990301		

AB A dielec. porcelain is produced by: mixing CuO , preferably at 0.1-2.0 wt.% with a BaO-TiO<sub>2</sub>-ReO<sub>3/2</sub>-Bi<sub>2</sub>O<sub>3</sub> main material, where Re is a lanthanide, to obtain a ceramic **material mixt.**; **sintering** the mixt., preferably at .gtoreq.950.degree.; grinding the calcined **material mixt.**, preferably to an av. particle diam. of .ltorsim.2.0 .mu.; mixing a B<sub>2</sub>O<sub>3</sub>-SiO<sub>2</sub> glass with the ground **material mixt.** to give a glass ceramic **material mixt.**; and **sintering** the material, preferably at .ltoreq.1000.degree.. Addnl. CuO may be added along with the glass component; the glass component may also include an alk. earth metal oxide. The final mixt. may be formed before calcination. At least 1 electrode may be placed inside a body surrounded by the glass ceramic **material mixt.** The received dielec. porcelain compn. is **sinterable** at low temps. and possesses a high specific dielec. const. and a high Q-value and a satisfying thermal stability.

L37 ANSWER 20 OF 48 HCAPLUS COPYRIGHT 2003 ACS

AN 2000:475611 HCAPLUS

DN 133:108881

TI Low **sintering temperature** cordierite ceramics with high thermal shock resistance and their preparation

IN Merkel, Gregory A.

PA Corning Incorporated, USA

SO PCT Int. Appl., 38 pp.

CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	---	----	-----	-----
PI	WO 2000040521	A1	20000713	WO 1999-US30291	19991217
	W: CN, JP, KR, ZA				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	US 6391813	B1	20020521	US 1999-473376	19991228
PRAI	US 1998-114420P	P	19981231		

AB **Sintered** ceramic articles with a primary cryst. phase of cordierite and an anal. oxide compn., in wt. percent, of 44-53 % SiO<sub>2</sub>, 30-38% Al<sub>2</sub>O<sub>3</sub>, 11-16% MgO and 0.05-10% a metal oxide exhibit a coeff. of thermal expansion in at least one direction .ltorsim. 15.0x10<sup>-7</sup>/.degree.C at about 25.degree. to about 800.degree.. The sum of the wt. percentages of residual mullite, corundum, and spinel, as measured by X-ray diffractometry of the crushed and powd. body, is .ltoreq.15%. The ceramics are produced by (a) selecting a raw **material batch mixt.** for forming the cordierite ceramic body, comprising .gtoreq.2 compds. which serve as an alumina source, a silica source and a magnesia source, and .gtoreq.1 metal oxide source in an amt. to result in the cordierite body comprising, on an anal. oxide basis 0.05-10 wt.% of the metal oxide; (b) adding an org. binder system to the inorg. mixt. and forming the mixt. into a green body; (c) drying the green body and thereafter firing the green body at a time and at .ltorsim. 1300.degree.. Preferred metal oxide sources include the oxides or oxide-forming compds. of Mo, W, Bi, Cu, Y, lanthanide metals and B. The batch mixt. can be extruded and dried to prep. a honeycomb-shaped body for catalyst manuf.

02/13/2003

RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L37 ANSWER 21 OF 48 HCAPLUS COPYRIGHT 2003 ACS

AN 2000:461286 HCAPLUS

DN 133:47568

TI Process for the preparation of high critical-temperature  
superconductive coil

IN Noh, Kwang-soo; Sin, Woo-suk; Bae, Sung-joon; Kim, Won-baek

PA Kaist, S. Korea

SO Repub. Korea, No pp. given

CODEN: KRXXFC

DT Patent

LA Korean

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	KR 9606240	B1	19960511	KR 1993-31239	19931230
PRAI	KR 1993-31239		19931230		
AB	High-temp. superconducting coil for high crit. c.d. is produced by : (1)coil extrusion of a <b>mixt.</b> of raw <b>material</b> powder and binder, (2) slow heating and controlled unidirectional grain growth of the coil-type superconductor for crystn. at .gtoreq. 1050.degree., and (3) <b>sintering</b> of the grain-coarsened coil. Equipment for unidirectional grain growth includes an outer elec. furnace, an inner heating element, a transfer device, and silver plates. The raw <b>material mixt.</b> for prepg. superconductor consists of Y2Ba2Cu3O7, BaCuO2, and CuO powder. The binder used comprises 67% ethanol, 15% glycerin, and 15% Metolose. Under optimum conditions, the manuf. proceeds in 5 steps: (1) the mixing ratio of raw powders/binder is maintained at 10/3; (2) the <b>temp.</b> of inner heating elements in double furnace is .gtoreq. 1050.degree.C; (3) increasing the velocity of the extruded coil at 2mm/h; (4) the grain-coarsened coil is heated to 550.degree.C in an oxygen atm.; and (5) the mix is <b>sintered</b> for 10 h.				

L37 ANSWER 22 OF 48 HCAPLUS COPYRIGHT 2003 ACS

AN 2000:402054 HCAPLUS

DN 133:7980

TI **Composite material** containing metal matrix and  
dispersed particles and use thereof

IN Kondo, Yasuo; Kaneda, Junya; Aono, Yasuhisa; Abe, Teruyoshi; Ingaki,  
Masahisa; Saito, Ryuichi; Koike, Yoshihiko; Arakawa, Hideo

PA Hitachi, Ltd., Japan

SO PCT Int. Appl., 53 pp.

CODEN: PIXXD2

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000034539	A1	20000615	WO 1998-JP5527	19981207
	W: CN, JP, KR, RU, US RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	EP 1167559	A1	20020102	EP 1998-957211	19981207
	R: DE, FR, GB, IT, NL, SE				
	CN 1093565	B	20021030	CN 1998-809356	19981207
PRAI	WO 1998-JP5527	W	19981207		
AB	A <b>composite material</b> having a high <b>thermal</b> <b>cond.</b> , a low <b>coeff.</b> of <b>thermal</b>				

02/13/2003

**expansion**, and a high plastic workability and the use thereof in the fields of semiconductors and so forth. Specifically, a **composite material** comprising a metal and particles of an inorg. compd. having a **coeff. of thermal expansion** lower than that of the metal, characterized in that the particles are dispersed in the form of a lump having a complicated configuration wherein at least 95% of the particles are connected to one another. It is possible to obtain a **composite material** which contains 20 to 80 vol.% of **copper oxide**, the balance being **copper**, has a **coeff. of thermal expansion** of  $5 \times 10^{-6}$  to  $14 \times 10^{-6}/^{\circ}\text{C}$  in the **temp.** range of room **temp.** to  $300 >^{\circ}\text{C}$  and a **thermal cond.** of 30 to  $325 \text{ W/m.K}$ , and can be applied to heat sinks of semiconductor devices and dielec. plates of electrostatic adsorbers.

RE.CNT 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L37 ANSWER 23 OF 48 HCAPLUS COPYRIGHT 2003 ACS

AN 2000:343566 HCAPLUS

DN 133:82243

TI Structural, transport, and magnetic properties of  $\text{Pr}_{1.85}\text{Ce}_{0.15}\text{CuO}_{4-y}$  prepared through different precursors

AU Conceicao, A.; Cohenca, C. H.; Jardim, R. F.

CS Instituto de Fisica, Universidade de Sao Paulo, Sao Paulo, Brazil

SO Physica C: Superconductivity and Its Applications (Amsterdam) (2000), 333(3&4), 170-180

CODEN: PHYCE6; ISSN: 0921-4534

PB Elsevier Science B.V.

DT Journal

LA English

AB Polycryst. samples of the electron-doped high- $T_c$  superconductor  $\text{Pr}_{1.85}\text{Ce}_{0.15}\text{CuO}_{4-y}$  were prepd. with different starting **materials**: (1) **mixt.** of simple oxides  $\text{Pr}_6\text{O}_{11}$ ,  $\text{CeO}_2$ , and  $\text{CuO}$ ; (2) **mixt.** of simple oxides  $\text{Pr}_6\text{O}_{11}$  and  $\text{CuO}$ , and an intermediate compd.  $\text{PrCeO}_2$ ; and (3) from a sol-gel precursor. All the samples were **sintered** in air at **temps.** below  $1030.^{\circ}\text{C}$ . and reduced under Ar atm. at  $950.^{\circ}\text{C}$ . Observations of x-ray diffraction, elec. resistivity,  $\rho(T)$ , and magnetization,  $M(T)$ , indicate the important effects that Ce diffusion and homogeneity have upon the macroscopic properties of this compd. The kinetics of the phase formation was accompanied by measurements of x-ray powder diffraction. These measurements, along with the detn. of the lattice parameters  $a$  and  $c$  of the tetragonal  $T'$ -structure of these compds., revealed that a complete diffusion of Ce into  $\text{Pr}_2\text{CuO}_{4-y}$  is only obsd. in samples prepd. through a sol-gel precursor. Elec. resistivity measurements are consistent with the x-ray data and show both higher and sharper superconducting transition **temps.**  $T_{ci}$  in sol-gel samples. Measurements of magnetization performed on either pellets and powders confirm the latter results and indicate that samples prepd. through sol-gel route have larger diamagnetic susceptibility at low **temps.** Qual. arguments suggesting the importance of Ce stoichiometry in both the normal-state elec. resistance and the superconducting properties of these polycryst. samples are discussed.

RE.CNT 34 THERE ARE 34 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L37 ANSWER 24 OF 48 HCAPLUS COPYRIGHT 2003 ACS

AN 2000:254047 HCAPLUS

DN 132:297453

TI Procedure for the production of melt textured volume samples on the basis of high **temperature** superconductor  $\text{Nd}_{1-x}\text{Ba}_2\text{Cu}_{3-2x}\text{O}_{7-x}$  ( $\text{NdBC}$ ).



02/13/2003

IN Kaiser, Axel; Bornemann, Hans  
PA Forschungszentrum Karlsruhe GmbH, Germany  
SO Ger. Offen., 6 pp.  
CODEN: GWXXBX  
DT Patent  
LA German  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	---	-----	-----	-----
PI	DE 19841664	A1	20000420	DE 1998-19841664	19980911
PRAI	DE 1998-19841664		19980911		
AB	<p>A procedure for the prodn. of bulk Nd1Ba2Cu3O7/Nd4Ba2Cu2O10 (NdBC) high-<b>temp.</b> superconductor is described. The compn. and the raw materials are optimized in order to achieve the requirements, e.g. the increase of the levitation capability or applications in the magnetic field. A powder <b>mixt.</b> of raw <b>materials</b> is ground in a mill to a uniform mixt. until 0.18 wt.% CO2 is absorbed and the particle size equilibrates. Binders used for shaping the powder mixt. are such as Shellac, PMMA, wax, thermoplastics, or polymers such as polyvinyl butyral, or polyvinyl alc., and their derivs., or polyacrylate or polymethacrylate deriv. The green mass is heat treated in air, each sample being top-seeded with oriented seed crystals, and heat treated in air to seal and texture them. The samples achieve the Tc and Jc supercond. properties required, with at least one more heat treatment in Ar, Ar-O, or air atm. for 6-24 h at 800-1030.degree.C. The green mass is heat treated to the <b>sintering temp.</b> where the binder burn-out occurs. The samples may contain 50 Nd-123, 5-50 Nd-422, and/or 0-45 Y-211, and/or 0-45 Sm-211. The compn. is made from one or more of Nd0.8-1.8Ba2-yCu3-zO7-x, where x = 0-0.5, yr = -0.2-0.2, z = -0.3-0.3, Nd2O3 0-15, Nd4Ba2Cu2O10 0-50, Y-123 0-20, Sm-123 0-20, Y-211 0-45, Sm-211 0-45, Nd-422 0-45 wt.%, a reaction mixt. of Nd-422, BaCuOx, and CuO or an oxide/carbonate mixt. of Nd2O3, BaO, BaCO3 and CuO or a mixt. of Ba/Cu from BaCO3/BaO and CuO and Nd2O3. Compns. may also be made with one or more of (3 mol% BaCuO + 2 mol% CuO) 0-10, silver oxide 0-6, Pt or PtO2 0.1-1, Ce or CeO2 0.1-2, Rh or Rh2O3 0.005-1, Yb2O3 0-2, uranium or uranium oxide (238U or 238U + 235U or natural U) 0-2. The compns. may also contain 0-2 wt.% of one or more of BaO, CuO, CaO2, MgO, Al2O3 or BaZrO3 (or BaO + ZrO2) 0-15 wt.%, and 0-1 wt.% of one or more of ZrO2, V2O5, TiO2, Nb2O5, Sb2O3, Bi2O3. The method involves handling in air, thus simplifying the process, in particular application of the seed crystals and in the use of a simple furnace.</p>				

RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L37 ANSWER 25 OF 48 HCAPLUS COPYRIGHT 2003 ACS  
AN 1999:522227 HCAPLUS  
DN 131:162095  
TI Novel thermal properties of nanostructured materials  
AU Eastman, J. A.; Choi, U. S.; Soyez, G.; Thompson, L. J.; DiMelfi, R. J.  
CS Materials Science Div., Argonne National Lab., Argonne, IL, 60439, USA  
SO Materials Science Forum (1999), 312-314 (Metastable, Mechanically Alloyed and Nanocrystalline Materials), 629-634  
CODEN: MSFOEP; ISSN: 0255-5476  
PB Trans Tech Publications Ltd.  
DT Journal; General Review  
LA English  
AB A review with 18 refs. A new class of heat transfer fluids, termed nanofluids, has been developed by suspending nanocryst. particles in liqs. Due to the orders-of-magnitude larger **thermal conductivities** of solids compared to those of liqs. such as water, significantly enhanced thermal properties are obtained with nanofluids.

02/13/2003

For example, an approx. 20% improvement in effective **thermal cond.** is obsd. when 5 vol.% CuO nanoparticles are added to water. Even more importantly, the heat transfer **coeff.** of water under dynamic flow conditions is increased more than 15% with the addn. of less than 1 vol% CuO particles. The use of nanofluids could impact many industrial sectors, including transportation, energy supply and prodn., electronics, textiles, and paper prodn. by, for example, decreasing pumping power needs or reducing heat exchanger sizes. In contrast to the enhancement in effective thermal transport rates that is obtained when nanoparticles are suspended in fluids, nanocryst. coatings are expected to exhibit reduced **thermal conductivities** compared to coarse-grained coatings. Reduced **thermal conductivities** are predicted to arise because of a redn. in the mean free path of phonons due to presence of grain boundaries. This behavior, combined with improved mech. properties, makes nanostructured zirconia coatings excellent candidates for future applications as thermal barriers. Yttria-stabilized zirconia (YSZ) thin films are being produced by metal-org. chem. vapor deposition techniques. Preliminary results have indicated that the **thermal cond.** is reduced by approx. a factor-of-two at room temp. in 10 nm grain-sized YSZ compared to coarse-grained or single crystal YSZ.

RE.CNT 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L37 ANSWER 26 OF 48 HCAPLUS COPYRIGHT 2003 ACS  
AN 1999:219456 HCAPLUS  
DN 130:319055  
TI Thermoelectric properties and electronic structures for impurity-doped Bi<sub>2</sub>Te<sub>3</sub>  
AU Sugihara, S.; Suzuki, H.; Kawashima, S.; Fujita, M.; Kajikawa, N.; Shiraishi, K.; Sekine, R.  
CS Department of Materials Science and Ceramic Technology, Fujisawa, Japan  
SO Proceedings of the International Conference on Thermoelectrics (1998), 17th, 59-63  
CODEN: PICTEM; ISSN: 1078-9642  
PB International Thermoelectric Society  
DT Journal  
LA English  
AB We studied the effects of Cu- and Cu<sub>2</sub>O doped into each n- and p- type Bi<sub>2</sub>Te<sub>3</sub> for thermoelec. properties as well as X-ray Photoelectron Spectrum(XPS) evaluation following with the calcd. XPS, esp. focused on the valence electrons. Cu-doping effected on the electronic structures at Fermi level of Bi<sub>2</sub>Te<sub>3</sub>. Furthermore, thermoelec. properties of elec. resistivity, Seebeck **coeff.** and **thermal cond.** were also effected by doping Cu, where the n-type Cu-doped Bi<sub>2</sub>Te<sub>3</sub> indicated ZT; 0.7. There were not much different effects between Cu- and Cu<sub>2</sub>O doping.

RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L37 ANSWER 27 OF 48 HCAPLUS COPYRIGHT 2003 ACS  
AN 1998:502678 HCAPLUS  
DN 129:144110  
TI **Composite magnetic material** for pressed powder core and its manufacture  
IN Matsuya, Shinya; Harata, Shinji  
PA Matsushita Electric Industrial Co., Ltd., Japan  
SO Jpn. Kokai Tokkyo Koho, 6 pp.  
CODEN: JKXXAF  
DT Patent

02/13/2003

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 10208923	A2	19980807	JP 1997-7284	19970120
PRAI	JP 1997-7284		19970120		

AB The composite consists of a magnetic metal and Fe, Al, Ti, Sn, Si, Mn, Ta, Zr, Ca, Zn, and/or their alloys. Alternatively, the composite consists of a magnetic metal and .gtoreq.1 oxides of Fe, Al, Ti, Sn, Si, Mn, Ta, Zr, Ca, Zn, and/or their alloys. The composite is prepd. from a mixt. of the magnetic metal, the selected described metals, and optionally oxides of the selected metals by shaping and heating at .gtoreq.500.degree.. The composite shows no **sintering** among the magnetic metal powder or no diffusion of binders or the elec. insulating oxide components into the magnetic powder at .gtoreq.500.degree.. The resulting magnetic core, e.g., toroidal coil, etc., shows improved magnetic permeability and reduced core loss.

L37 ANSWER 28 OF 48 HCAPLUS COPYRIGHT 2003 ACS

AN 1998:295214 HCAPLUS

DN 129:30791

TI Beryllium coatings produced by evaporation-condensation method and some of their properties

AU Pepekin, G. I.; Anisimov, A. B.; Chernikov, A. S.; Mozherinn, S. I.; Pirogov, A. A.

CS SRI SIA Lutch., Podolsk, 142100, Russia

SO JAERI-Conf (1998), 98-001(Proceedings of the IEA International Workshop on Beryllium Technology for Fusion, 1997), 341-352  
CODEN: JECNEC

PB Japan Atomic Energy Research Institute

DT Journal

LA Japanese

AB Vacuum evapn.-condensation for deposition of beryllium coatings on metal substrates is considered attractive for ITER (International Thermonuclear Exptl. Reactor) application and, in particular, may be useful for repair of surfaces of eroded tiles which operate in a strong magnetic field. The possibility of deposition of beryllium coatings at the layer growth rate 0.1-0.2 mm/h is shown. The beryllium coating is compatible with **copper** or stainless steel substrate due to an intermediate barrier. The results of examn. of microstructure, microhardness, porosity, thermal and phys. properties, and stability under thermal cycling of beryllium materials are presented. The value of **thermal expansion coeff.** and **thermal cond.** of condensed beryllium are approx. the same as for industrial grade material produced by powder metallurgy technique. However, the condensed beryllium has higher purity (up to 99.9-99.99 % wt.).

L37 ANSWER 29 OF 48 HCAPLUS COPYRIGHT 2003 ACS

AN 1995:321955 HCAPLUS

DN 123:23289

TI Thermoelectric power and **thermal conductivity** in YBa<sub>2</sub>(Cu<sub>1-x</sub>Fe<sub>x</sub>)<sub>3</sub>O<sub>7- $\delta$</sub>  with or without excess of **copper** oxide

AU Bougrine, H.; Ausloos, M.; Houssa, M.; Mehbod, M.

CS SUPRAS, Institut de Physique B5, Universite de Liege, Liege, 4000, Belg.

SO Physica C: Superconductivity (Amsterdam) (1994), 235-240(Pt. 2), 1465-6  
CODEN: PHYCE6; ISSN: 0921-4534

PB Elsevier

DT Journal

LA English

AB Thermoelec. power and **thermal cond.** of

02/13/2003

YBa<sub>2</sub>(Cu<sub>1-x</sub>Fe<sub>x</sub>)<sub>3</sub>O<sub>7- $\delta$</sub>  polycrystals for 0 < x < 0.03 and with y% CuO (y is 0 and 5) extrinsic impurity were simultaneously measured as a function of temp. Samples were prepd. following the same synthesis runs, and characterized by x-ray, EDX, and magnetic susceptibility techniques. When increasing Cu oxide concn., the transition is unaffected with respect to the pure sample, and the thermal transport **coeffs.** correspond to very well oxygenated systems. Fe doped samples showed a lower transition temp. and features corresponding to low oxygenation systems. Fe doped sample with CuO revealed also the partial absorption of Fe by the extra CuO phase due to the diln. of Fe in the excess of CuO at grain boundaries. Fe-doping and excess CuO markedly reduce the **thermal cond.**

L37 ANSWER 30 OF 48 HCAPLUS COPYRIGHT 2003 ACS

AN 1994:206825 HCAPLUS

DN 120:206825

TI Manufacture of multilayered ceramic substrates

IN Nakatani, Seiichi; Juhaku, Sei; Hakotani, Yasuhiko; Nakamura, Yoshifumi; Miura, Kazuhiro

PA Matsushita Electric Ind Co Ltd, Japan

SO Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	JP 05308193	A2	19931119	JP 1992-110567	19920430
PRAI	JP 1992-110567		19920430		
AB	More than 2 laminates manufd. from glass-ceramics green sheets contg. org. binders and plasticizers and having electrode patterns are stacked with inorg. green sheets, which do not <b>sinter</b> at glass-ceramics firing <b>temp.</b> , in between; fired; and the inorg. sheets are removed. The inorg. sheets may be removed by ultrasonic cleaning. The glass-ceramics sheets maintain their area size during <b>sintering</b> .				

L37 ANSWER 31 OF 48 HCAPLUS COPYRIGHT 2003 ACS

AN 1991:621156 HCAPLUS

DN 115:221156

TI Manufacture of perovskite superconducting **sintered** material

IN Haseyama, Hideetsu; Kawazu, Koichi

PA Dowa Mining Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	JP 03097655	A2	19910423	JP 1989-232459	19890907
PRAI	JP 1989-232459		19890907		
AB	The title manuf. involves <b>sintering</b> a source-material <b>mixt.</b> contg. a CuO powder having a sp. surface area of 30-100 m <sup>2</sup> /g to increase the crit. <b>temp.</b>				

L37 ANSWER 32 OF 48 HCAPLUS COPYRIGHT 2003 ACS

AN 1990:22104 HCAPLUS

DN 112:22104

TI Fillers for potting compositions for semiconductor devices

IN Fushii, Yasuto; Ootaguro, Kenji; Chiba, Takashi

PA Denki Kagaku Kogyo K. K., Japan

02/13/2003

SO Jpn. Kokai Tokkyo Koho, 10 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 01172433	A2	19890707	JP 1987-329636	19871228
PRAI	JP 1987-329636		19871228		

AB Title fillers with high **thermal cond.**, useful for improving the thermal shock resistance, comprise substances which have linear expansion **coeff.** (c) 0.1 .times. 10<sup>-6</sup> K<sup>-1</sup> and contain oxides of metals (other than Al, Si, and alkali metals) 7-30, Al<sub>2</sub>O<sub>3</sub> 7-30, and SiO<sub>2</sub> 40-86 mol %. A cured mixt. of cresol novolak epoxy resin (epoxy equiv. 215) 150, brominated cresol novolak epoxy resin (epoxy equiv. 350) 45, phenolic novolak (OH equiv. 107) 87, powd. 74.6:12.7:12.7 (mol) SiO<sub>2</sub>-Al<sub>2</sub>O<sub>3</sub>-**Cu<sub>2</sub>O** solid soln. (c = -0.6 .times. 10<sup>-6</sup> K<sup>-1</sup>) 846, Sb<sub>2</sub>O<sub>3</sub> 5.6, carbon black 3, carnauba wax 4.4, 2-phenyl-4-methyl-5-(hydroxymethyl)imidazole 2.5, and .gamma.-glycidoxypolytrimethoxysilane 5 parts showed **thermal cond.** 2.9 .times. 10<sup>-5</sup> cal.K<sup>-1</sup>.S<sup>-1</sup>.cm<sup>-1</sup> and, after transfer molding, withstood 118 cycles of 30-s in a liq. at -196.degree. and 30 s in a liq. at +260.degree., vs. 1.9 .times. 10<sup>-5</sup> and 73, resp., when the solid soln. was replaced with glassy SiO<sub>2</sub> (c = 0.5 .times. 10<sup>-6</sup> K<sup>-1</sup>).

L37 ANSWER 33 OF 48 HCAPLUS COPYRIGHT 2003 ACS

AN 1989:607676 HCAPLUS

DN 111:207676

TI Magnesium titanate-based dielectric ceramics

IN Niihara, Junji; Takatani, Minoru

PA TDK Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 4 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 01143104	A2	19890605	JP 1987-301348	19871128
PRAI	JP 1987-301348		19871128		

AB The title **materials** are **sintered mixts.** of 100 parts main component comprising MgTiO<sub>3</sub> (MgO/TiO<sub>2</sub> mol ratio 0.91-1.10) 100, CuO 1-30, and Mn oxides 0-5 (as MnO) parts and 5-200 parts glass. Ceramics having low dielec. const., high insulation resistance, and high Q values are prepd. at low **sintering temp.** MgO 83.8, TiO<sub>2</sub> 166.2, CuO 12.5, and MnCO<sub>3</sub> 2.5 g were kneaded with water and calcined to give powder, 100 parts of which was mixed with 100 parts lead aluminosilicate glass and a binder, screen-printed, and fired to give a capacitor having excellent dielec. characteristics.

L37 ANSWER 34 OF 48 HCAPLUS COPYRIGHT 2003 ACS

AN 1989:164546 HCAPLUS

DN 110:164546

TI Method of manufacturing a multilayer ceramic body

IN Nakatani, Seiichi; Nishimura, Tsutomu; Yuhaku, Satoru; Ishida, Toru

PA Matsushita Electric Industrial Co., Ltd., Japan

SO U.S., 11 pp.

CODEN: USXXAM

DT Patent

LA English

FAN.CNT 2

02/13/2003

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 4795512	A	19890103	US 1987-18579	19870225
	JP 03021108	B4	19910320	JP 1986-41205	19860226
	JP 62205692	A2	19870910	JP 1986-48822	19860306
	JP 03021109	B4	19910320		
	JP 03021110	B4	19910320	JP 1986-74739	19860401
PRAI	JP 1986-41205		19860226		
	JP 1986-48822		19860306		
	JP 1986-74739		19860401		
AB	<p>A method of manufg. a multilayer ceramic using <b>Cu</b> as the conductor material is described. This method comprises a step of forming a multilayer laminate by the green tape multilayer laminating method or by the thick film printing method on ceramic substrate with an insulating <b>material</b> with a <b>mixt.</b> of ceramic and glass contg. Pb oxide as its main component and a conductor paste with CuO as its main component; a step of heat-treatment for decomp. and removing org. binder in air (binder removing process); a step of causing redn. at <b>temps</b> . where <b>Cu</b> oxide is reduced, but Pb oxide is not, in a mixed gas atm. of N and H (redn. process); and a step of firing in a N atm., thereby effecting <b>sintering</b> of the insulating material composed of ceramic and glass contg. Pb oxide and metalization of <b>Cu</b> electrodes (firing process). For the uppermost layer electrodes, metal <b>Cu</b> paste is employed, and a pattern printing process is conducted subsequent to the aforementioned redn. process, so that the <b>sintering</b> of the insulating material and the metalization of the uppermost layer are simultaneously performed; in this way, highly reliable uppermost layer <b>Cu</b> electrodes for e.g., semiconductor integrated circuits, are obtainable.</p>				

L37 ANSWER 35 OF 48 HCAPLUS COPYRIGHT 2003 ACS

AN 1988:136339 HCAPLUS

DN 108:136339

TI Direct coating. Metalization of ceramic substrates by direct **copper** bonding

AU Waibel, B.; Martin, W.

CS Pforzheim, Fed. Rep. Ger.

SO Industrie-Anzeiger (1987), 109(83), 25-7

CODEN: IANZAQ; ISSN: 0019-9036

DT Journal

LA German

AB Al<sub>2</sub>O<sub>3</sub> and BeO ceramic substrates are coated with 0.1-1 mm thick **Cu** foils by a direct **Cu**-bonding process (DCB). The resulting high **Cu**-ceramic adhesion is due to the formation of a liq. eutectic **Cu-Cu<sub>2</sub>O** interlayer, the m.p. of which is lower than that of **Cu**, by surface oxidn. of the **Cu** foil and subsequent heating in an inert gas atm. to 1065-1083. The **Cu**-metalized ceramics had high **thermal cond.** and favorable **thermal expansion** (close to that of Si chips) making them most suitable as substrates in power electronic devices.

L37 ANSWER 36 OF 48 HCAPLUS COPYRIGHT 2003 ACS

AN 1987:539202 HCAPLUS

DN 107:139202

TI Surface treatment of **copper** or **copper** alloys

IN Takemura, Tsuyotoshi; Kobayashi, Masahiro; Ikeda, Tomoharu

PA Mitsubishi Electric Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 3 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

02/13/2003

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 61295378	A2	19861226	JP 1985-139622	19850624
PRAI	JP 1985-139622		19850624		

AB After immersion in molten salt contg. mainly Bi<sub>2</sub>O<sub>3</sub>, the **Cu** or **Cu** alloys preferably have an external compd. layer of .alpha.-, .beta.-, .gamma.-, or .delta.-phase Bi<sub>2</sub>O<sub>3</sub>, and an intermediate layer contg. mainly Bi<sub>2</sub>O<sub>3</sub>. The method increases surface hardness, and decreases **thermal cond. and thermal expansion coeff.** The coated **Cu**-alloy parts are useful for absorbing thermal radiation. Thus, a JIS C1100 **Cu** sheet (1 mm) was immersed in molten Bi<sub>2</sub>O<sub>3</sub> at 900.degree. for 1 h. The coating layers from surface were Bi<sub>2</sub>O<sub>3</sub>, (Bi<sub>2</sub>O<sub>3</sub> + CuO.2Bi<sub>2</sub>O<sub>3</sub>), CuO.2Bi<sub>2</sub>O<sub>3</sub>, (CuO + CuO.2Bi<sub>2</sub>O<sub>3</sub>), and a CuO layer on the **Cu** substrate. Vickers hardness of the coating layer was 300 vs. 50 for the substrate surface.

L37 ANSWER 37 OF 48 HCAPLUS COPYRIGHT 2003 ACS

AN 1985:195143 HCAPLUS

DN 102:195143

TI Electrostatographic toner

PA Minolta Camera Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 4 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 60004948	A2	19850111	JP 1983-113368	19830622
PRAI	JP 1983-113368		19830622		

AB A heat-fixable electrostatog. toner is composed of a thermoplastic resin, a colorant, and 1-7 .mu.m particles of a metal or metal compd. having a **thermal cond. coeff.** .gtoreq.0.9 W/m-deg at 0.1-10 wt.% of the toner. The toner provides a high rate of thermal fixing and is economical. Thus, a mixt. contg. an acrylic monomer-styrene copolymer resin (glass-transition temp. 58.degree.) 100, C black (MA #8; Mitsubishi Chem. Ind.) 5, an oil-sol. dye (Bontron N-06; Orient Chem. Ind.) 5, and low-mol.-wt. polypropylene (Viscol 330P; Sanyo Chem. Ind.) 2.5 parts was kneaded, pulverized, and classified to a 14 .mu. av. diam. CuO particles (3 .mu. diam.) 5% were added to obtain a toner, which was mixed with colloidal SiO<sub>2</sub> (R-972; Nippon Aerosil Co.) 0.2%. A carrier was prepd. by using an acrylic monomer-styrene copolymer (Pliolite ACL; Goodyear) 100, a magnetic powder (Mapico Black BL-500; Titan Kogyo K.K.) 200, and C black (MA #100) 5 parts and added to the toner. Copying tests using a Teflon-coated heated roller (150-170.degree.) at a rate of 25 A4 size paper sheet/min gave very well-fixed copies having good images.

L37 ANSWER 38 OF 48 HCAPLUS COPYRIGHT 2003 ACS

AN 1984:620999 HCAPLUS

DN 101:220999

TI High-dielectric-constant ceramic composition

IN Yamashita, Youhachi; Takahashi, Takashi; Harata, Mituo

PA Toshiba Corp., Japan

SO Eur. Pat. Appl., 26 pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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02/13/2003

PI EP 121161 A1 19841010 EP 1984-102836 19840315  
EP 121161 B1 19861015  
R: DE, GB, NL  
JP 59181407 A2 19841015 JP 1983-53785 19830331  
JP 62057043 B4 19871128  
CA 1255491 A1 19890613 CA 1984-448962 19840306  
US 4544644 A 19851001 US 1984-593119 19840326  
PRAI JP 1983-53785 19830331

AB A low-**temp.-sintering**, high-dielec.-const. ceramic compn. suitable for multilayer capacitors is disclosed, comprised of BaO and/or CaO, PbO, Fe<sub>2</sub>O<sub>3</sub>, Nb<sub>2</sub>O<sub>5</sub>, WO<sub>3</sub>, and CuO, and represented by the formula  $x\text{Pb}(\text{Fe}_{1/2}\text{Nb}_{1/2})\text{O}_3\text{-yM}(\text{Cu}_{1/2}\text{W}_{1/2})\text{O}_3\text{-zPb}(\text{Fe}_{2/3}\text{W}_{1/3})\text{O}_3$ , where M is Ba and/or Ca, and contg. 0-1.0 wt. % MnO with respect to the **composite material**. The compn. is limited to the area defined by points A, B, C, and D on the ternary diagram: A: x = 65, y = 5, z = 30; B: x = 90, y = 10, z = 0; C: x = 65, y = 0.5, z = 34.5; and D: x = 99.5, y = 0.5, z = 0.

L37 ANSWER 39 OF 48 HCAPLUS COPYRIGHT 2003 ACS

AN 1982:147740 HCAPLUS

DN 96:147740

TI Tin dioxide-based ceramics

AU Drozd, V. I.; Alapin, B. G.; Aksel'rod, B. I.; Degtyareva, E. V.

CS Ukr. Nauchno-Issled. Inst. Ogneuporov, Kharkov, USSR

SO Steklo i Keramika (1982), (2), 27

CODEN: STKRAQ; ISSN: 0039-1115

DT Journal

LA Russian

AB Dense SnO<sub>2</sub> ceramics with d. 6.4-6.6 g/cm<sup>3</sup>, open porosity 1.8-4.2%, refractoriness 1900.degree., and **thermal expansion coeff.** 5.9 .times. 10<sup>-6</sup>/degree (20-1400.degree.) were prepd. from SnO<sub>2</sub> powders doped with 0.5% MnO<sub>2</sub>, 0.5% ZnO, and 0.5% CuO. The SnO<sub>2</sub> ceramics addnl. doped with 0.5% Sb<sub>2</sub>O<sub>5</sub> and 1.0% V<sub>2</sub>O<sub>5</sub> had vol. resistivity 10<sup>-2</sup>-10<sup>-1</sup> .OMEGA.-m at 700.degree. and can be used for electrode manuf. Thermal shock resistant SnO<sub>2</sub> ceramics with d. 5.7-5.9 g/cm<sup>3</sup>, open porosity 16%, and **thermal cond.** (at 400-1200.degree.) 4.5-5.0 W/(m-K) were obtained from SnO<sub>2</sub> powders doped with 0.5% MnO<sub>2</sub> + 0.5% ZnO + 0.1% MgCl<sub>2</sub>. The latter can be used for the manuf. of bubbling pipes.

L37 ANSWER 40 OF 48 HCAPLUS COPYRIGHT 2003 ACS

AN 1980:77260 HCAPLUS

DN 92:77260

TI Temperature conductivity and heat capacity of antifriction self-lubricating plastics

AU Avaliani, D. I.; Arveladze, I. S.

CS Gruz. Politekh. Inst., Tiflis, USSR

SO Soobshcheniya Akademii Nauk Gruzinskoi SSR (1979), 96(1), 149-52

CODEN: SAKNAH; ISSN: 0002-3167

DT Journal

LA Russian

AB Thermal diffusivity **coeff.** of self-lubricating antifriction plastics increases on addn. of MoS<sub>2</sub> and decreases with increasing temp., and decrease in the rate of diffusivity increases with increasing temp. particularly for polymer compns. contg. 80% MoS<sub>2</sub>. Thermal diffusivity **coeff.** was detd. for polycarbonate, siloxane phenolic resin, and DV 101 [39281-59-9] and F-2 [24938-86-1] arom. polyesters. The addn. of CuO to a MoS<sub>2</sub>-polymer compn. increased the thermal diffusivity **coeff.** for all examd. polymers .apprx.15%. An equation based on additivity law was derived for calcn. of the heat capacity of the examd. materials from the **thermal cond.**, thermal diffusivity and d. of the polymers.



02/13/2003

L37 ANSWER 41 OF 48 HCAPLUS COPYRIGHT 2003 ACS

AN 1980:42707 HCAPLUS

DN 92:42707

TI Study of the heat conductivity of antifriction self-lubricating plastics

AU Avaliani, P. I.; Arveladze, I. S.

CS Gruz. Politekh. Inst., Tiflis, USSR

SO Soobshcheniya Akademii Nauk Gruzinskoi SSR (1979), 95(2), 393-6

CODEN: SAKNAH; ISSN: 0002-3167

DT Journal

LA Russian

AB The **coeff.** ( $\lambda$ ) of **thermal cond.** was studied at -150 to +200.degree. for 4 2-component systems and 4 3-component systems of antifriction plastics and generalized equations were derived for calcg.  $\lambda$ . The systems studied comprised MoS2 with polycarbonate, modified phenol-organosilicon resin, DV-101 [26659-32-5] polyester, or F-2 [24938-86-1] polyester and compns. of the polymers with MoS2 and CuO. An increase in  $\lambda$  was obsd. on increasing the temp., increasing the MoS2 concn., or adding CuO.

L37 ANSWER 42 OF 48 HCAPLUS COPYRIGHT 2003 ACS

AN 1974:497021 HCAPLUS

DN 81:97021

TI Figure of merit of sintered monoclinic zirconium dioxide with addition of **copper**(I) oxide

AU Derebarya, N. A.

CS Ukr. Poligr. Inst. im. Fedorova, USSR

SO Fizicheskaya Elektronika (Lvov) (1974), 7, 69-71

CODEN: FZELAD

DT Journal

LA Russian

AB The elec. cond., and thermoemf. were detd. for sintered monoclinic ZrO2 contg. **Cu2O** at 293-1273.degree.K and the **thermal cond.** was detd. at 293-673.degree.K. Upon increase of the **Cu2O** content to .apprx.1 mole %, the sp. cond. decreases by 2-3 times. A further increase to >25 mole % results in a sharp increase by 4-5 orders of magnitude, the value gradually reaching the sp. cond. of pure sintered ZrO2. The thermoemf. **coeff.** is 0.6-4 mV/degree, depending on compn. and temp. Its temp. dependence is complex. The **thermal cond.** of the samples increases with increasing **Cu2O** content. The figure of merit is 100 times greater for samples with 30 mole % **Cu2O** than for samples with 5 mole %.

L37 ANSWER 43 OF 48 HCAPLUS COPYRIGHT 2003 ACS

AN 1973:47189 HCAPLUS

DN 78:47189

TI Glass article having at least one electrically conductive exposed surface

IN Finn, John B.; Hudecek, Carl J.

SO U.S., 3 pp.

CODEN: USXXAM

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 3704110	A	19721128	US 1971-143243	19710513
PRAI	US 1971-143243		19710513		

AB An elec. conductive exposed **Cu** surface is produced on .gtoreq.1 surface of a solid shaped, vitreous, amorphous, noncrystn. glass article which was formed from a melt of homogenous glass contg. SiO2 50-94, **Cu2O** 1.5-35, Al2O3 0.5-30, Fe2O3 .ltoreq.6, CoO .ltoreq.6, NaO

02/13/2003

.ltoreq.6, AlF3 .ltoreq.6, and TiO2 .ltoreq.11 mole %. The Cu-contg. glass is the source of the Cu metal and is the substrate for the conductive layer. One or more surfaces of the shaped vitreous glass article was oxidized in an oxidizing atm. at 700-50.degree. for 6-15 min and then reduced in a reducing atm. at 600-1000.degree.F for 6-60 min. The shaped article remained in the glassy state forming in situ an integral elec. conductive Cu surface on the shaped, vitreous, amorphous, noncrystn. glass article. For example, a glass contg. SiO2 77.5, Al2O3 10, and Cu2O 12.5 mole %, with an annealing point of 629.degree., an unnealed d. of 2.7, and a **thermal expansion coeff.** of 3.2 .times. 10-7/degree (0-300.degree.) was mixed with Kona Quintus Quartz 3745, A-14 Al2O3 822.8, and Cu2O (96.3%) 1493 g and melted in a fused SiO2 crucible at 2950.degree.F for 24 hr under a 0.5% O atm. An elec. conductive surface was produced on the glass by exposing the glass to an oxidizing atm. at 500-1200.degree.F for 6-15 min. An adherent Cu metallic surface layer was obtained by first oxidizing in air at 700-750.degree. for 10-12 min and then reducing in H at 600-1000 for 6-60 min. The reduced sample was cooled at 5-15.degree.F/min in a H atm. to 200.degree.F. These articles are useful in printed circuits, capacitors, and sealing glass to quartz to obtain a **thermal conductive** surface.

L37 ANSWER 44 OF 48 HCAPLUS COPYRIGHT 2003 ACS

AN 1972:65552 HCAPLUS

DN 76:65552

TI Lithium-titanium-bismuth ferrites

IN Argentina, Giltan M.; Baba, Paul D.

PA Ampex Corp.

SO U.S., 2 pp.

CODEN: USXXAM

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 3630912	A	19711228	US 1969-863683	19691003
PRAI	US 1969-863683		19691003		

AB Oxides of metal ions were weighed out in stoichiometric proportions and were wet mixed for 1 hr or more in a ball mill. The slurry was dried at .apprx.100.degree. and the dried raw **material mixt.** was then forced through a std. 20 mesh. The mixt. was loaded into refractory boats which were placed in a furnace kept at 700-900.degree.. After ball milling the slurry was dried at .apprx.80.degree. to a fine powder. The powder was mixed with a binder such as polyvinyl alc. The binder impregnated powder was then shaped in tool steel dies with enough pressure to facilitate uniform compaction. The pressed shapes were then **sintered** at **temps.** ranging from 950-1150.degree. in atms. of O or air. The ferrites had the following compns.:  $\text{Li } 0.5+ (x - y - w/2)\text{Fe } 2.5- (3x + y + 2z + w/2) -\text{B Ti } x \text{ Cu } y \text{ Mn } z \text{ Zn } w \text{ Bi } B$   $0.4$ , where  $0.0005 \leq B \leq 0.065$  and  $0.30 \leq x \leq 0.95$ ,  $0 \leq y \leq 0.2$ ,  $0 \leq z \leq 0.2$ ,  $0 \leq w \leq 0.3$ , and  $B + x + y + z + w + [0.5+(x - y - w/2)] + [2.5- (3x + y + 2z + w/2)] - B = 3$ . In a preferred example the ferrite had the compn. where  $x = 0.55$ ,  $y = 0.1$ ,  $z = 0.1$ ,  $w = 0.1$ , and  $B = 0.002$ . The reaction step was performed at 800.degree.. The **sintering** step was performed at 1025.degree. in an air atm. The ferrite had a coercive force of 1.8 Oe, a remanence of 930 G, a satn. magnetization of 1259 G, a dielec. loss of 0.4 decibel/in., a resonance line width of 210 Oe, and a d. of 4.37 g/cc.

L37 ANSWER 45 OF 48 HCAPLUS COPYRIGHT 2003 ACS

02/13/2003

AN 1971:466847 HCAPLUS  
DN 75:66847  
TI Use of heat-insulating coatings for protecting the parts of a gas turbine  
AU Zubova, E. Ya.; Gordienko, Ya. I.; Zhurzhenko, V. P.; Ponomarenko, A. D.  
CS USSR  
SO Vestnik Khar'kovskogo Politekhicheskogo Instituta (1970), No. 40, 62-5  
CODEN: VEPIBL; ISSN: 0453-7998  
DT Journal  
LA Russian  
AB The blades of a gas turbine were coated with a mixt. contg. SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, CaO, CeO<sub>2</sub>, BaO, ZnO, CuO, Li<sub>2</sub>O, B<sub>2</sub>O<sub>3</sub>, V<sub>2</sub>O<sub>5</sub>, TiO<sub>2</sub>, Nb<sub>2</sub>O<sub>5</sub>, and Cr<sub>2</sub>O<sub>3</sub> by applying as a slip and annealing at 1220.degree., or with mixts. contg. Al<sub>2</sub>O<sub>3</sub> + SiO<sub>2</sub>, ZrO<sub>2</sub> + CaO, (Al<sub>2</sub>O<sub>3</sub> + SiO<sub>2</sub> + NiO)-Ni, and (Al<sub>2</sub>O<sub>3</sub> + SiO<sub>2</sub> + Cr<sub>2</sub>O<sub>3</sub>)-Cr by the plasma coating method. The greater was the coating thickness (.delta.n) to coating **thermal cond. coeff.** (.lambda.) ratio; the greater was its effectiveness. E.g., the plasma coating contg. ZrO<sub>2</sub> 94.3, and CaO 5.8%, having .lambda. = 0.35 W/m<sup>2</sup>-degree decreased the temp. of blade at 65.degree. at .delta.n = 0.2 mm, and by 166.degree. at 0.4 mm, at 900.degree.. The tension and vibrational tests showed the good mech. properties of the coatings, esp. the plasma coatings. E.g., cracks in the ZrO<sub>2</sub> plasma coatings occurred at stresses of .apprx.60 kg/mm<sup>2</sup>, compared to 21-4 kg/mm<sup>2</sup> for the annealed coatings.

L37 ANSWER 46 OF 48 HCAPLUS COPYRIGHT 2003 ACS  
AN 1970:428349 HCAPLUS  
DN 73:28349  
TI Basic refractory attack in **copper** converters  
AU Harris, J. Donald; Frechette, V. D.  
CS Gen. Refract. Co. Canada, Ltd., Smithville, ON, Can.  
SO Journal of the Canadian Ceramic Society (1932-1986) (1969), 38, 15-18  
CODEN: JCCSA9; ISSN: 0068-8444  
DT Journal  
LA English  
AB With the increased demands made on **Cu** converters today, refractories giving better service are required.. This investigation was undertaken to det. the major forms of refractory attack. Burned chromium-magnesite brick taken from a **Cu** converter was analyzed mainly by petrographic methods with the x-ray technique used in a secondary capacity. The principal destructive mechanism affecting the converter lining was slag slabbing following slag penetration of cracks behind the hot face. These cracks were caused by (1) differences in **thermal expansion** between the zone of **Cu<sub>2</sub>O** stuffing or **Cu** metal impregnation and the remainder of the brick, (2) hot spots deep in the brick due to the high **thermal cond.** of the impregnated zones, (3) mech. forces encountered by the tuyeres during punching to clear the orifices, and (4) some combination of these.

L37 ANSWER 47 OF 48 HCAPLUS COPYRIGHT 2003 ACS  
AN 1969:99299 HCAPLUS  
DN 70:99299  
TI Silica products with increased **thermal conductivity**  
IN Lipczynski, Stefan; Pawlowski, Stanislaw; Drozd, Mieczyslaw; Przegendza, Otto; Majewski, Eugeniusz; Szumakowicz, Jerzy  
PA Instytut Materialow Ogniotrwalych  
SO Pol., 2 pp.  
CODEN: POXXA7  
DT Patent  
LA Polish  
FAN.CNT 1

02/13/2003

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	PL 55019		19680510	PL	19660804
AB	Addn. of CuO to a silica mass contg. .ltoreq.3% CaO and .gtoreq.90% SiO2 increased the <b>thermal cond.</b> by .apprx.20%. Thus, cryst. quartzite of particle size 0-3 mm. 100 was mixed with CaO (as Ca(OH)2) 3, CuO 3, and waste sulfite liquor 1 part. The mass obtained was wetted with H2O to 6% moisture, mixed in a chaser mill, and pressed into slabs under the pressure of 400 kg./cm.2 The slabs were dried at .ltoreq.80.degree. and fired in a tunnel furnace at 1460.degree.. The fired material had refractoriness of 1620.degree., compressive strength 223 kg./ cm.2, d. 2.37 g./cm.3, <b>thermal expansion coeff.</b> 0.78%, open porosity 17.6%, and <b>thermal cond.</b> at 1000.degree. 1.88 kcal./(m. degree hr.).				

L37 ANSWER 48 OF 48 HCAPLUS COPYRIGHT 2003 ACS

AN 1961:6385 HCAPLUS

DN 55:6385

OREF 55:1205h-i

TI Thermoelectric compositions

IN Pessel, Leopold; Dziemianowicz, Theodore Q.

PA Radio Corp. of America

DT Patent

LA Unavailable

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	US 2953616		19600920	US	
AB	Detailed properties and compns. are given for thermoelec. compns. consisting of Bi telluride, Sb telluride, and 0.1-2% by wt. of at least one compd. selected from the oxides of <b>Cu</b> , Ag, Au, and Hg. A preferred p-type alloy was prepd. by melting together Bi 36.48, Te 51.62, Sb 11.63, and <b>Cu2O</b> 0.27% by wt. This alloy has a <b>coeff</b> . of <b>thermal cond.</b> of 0.0176 w./degree/cm.				

02/13/2003

L43 ANSWER 1 OF 50 HCAPLUS COPYRIGHT 2003 ACS

AN 2002:727434 HCAPLUS

DN 137:248753

TI Fluoropolymer-surfaced sliding material with good separation resistance and durability in severe conditions

IN Kuribayashi, Yasushi; Azuma, Hiroshi

PA NDC Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002276665	A2	20020925	JP 2001-71688	20010314
PRAI	JP 2001-71688		20010314		

AB Title sliding material is produced by (A) forming a **sintered** metal layer (e.g., from bronze powder) on a metal backing plate (e.g., **copper**), and covering a fluoropolymer-based surface layer (e.g., aramid fiber-reinforced PTFE Twaron TPL 250) via an adhesive layer contg. fluoropolymers (e.g., Fluon L 173J) and .gtoreq.1 selected from polyimides (e.g., HPC-6100-28) and poly(amide-imides).

L43 ANSWER 2 OF 50 HCAPLUS COPYRIGHT 2003 ACS

AN 2002:642083 HCAPLUS

DN 137:373627

TI High temperature stress relaxation in Ti- and **Cu**-doped reaction bonded Al2O3

AU Morales-Rodriguez, A.; Bravo-Leon, A.; Jimenez-Melendo, M.; Dominguez-Rodriguez, A.

CS Departamento de Fisica de la Materia Condensada., Universidad de Sevilla, Seville, 41080, Spain

SO Journal of the European Ceramic Society (2002), 22(14-15), 2641-2645

CODEN: JEC SER; ISSN: 0955-2219

PB Elsevier Science Ltd.

DT Journal

LA English

AB The high temp. **plastic** behavior of reaction-bonded alumina doped with **copper** and titanium oxide has been studied by means of stress relaxation tests in air providing the strain rate vs. stress curves at fixed temp. in a very straightforward way. The material was prepd. by isostatic pressing, **sintering** and **sinter**-forging a powder contg. Al 29.6, Al2O3 33.8, 2Y-TZP 29.7, CuO 3.5 and TiO2 3.5 wt.%. The final samples had relative d. >95 % and two cryst. phases were clearly identified, monoclinic zirconia and .alpha.-alumina, with some traces of tetragonal zirconia. The material consists of two phases with compns.: Al1.908Cu0.046Ti0.046O3 and Y0.039Zr0.961O1.980 (2 mol% Y2O3 doped ZrO2). The exptl. data have been correlated with the microstructural observations and X-ray diffraction to deduce the deformation mechanism. The material shows **plastic** behavior at temps. above 950 .degree.C. Around 1000 .degree.C, a linear **plastic** deformation law has been obsd. and both below and above this temp. the stress exponent takes higher values.

RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L43 ANSWER 3 OF 50 HCAPLUS COPYRIGHT 2003 ACS

AN 2002:424160 HCAPLUS

DN 136:381741

TI High-temperature resistant inorganic antibacterial agent

02/13/2003

IN Wu, Xinghui; Wang, Yude  
PA Yunnan Univ., Peop. Rep. China  
SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 4 pp.  
CODEN: CNXXEV

DT Patent  
LA Chinese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CN 1320378	A	20011107	CN 2000-108801	20000421
PRAI	CN 2000-108801		20000421		

AB The title antibacterial agent comprises AgNO<sub>3</sub> 0-10, CuO 0-10, ZnO 0-20, and one or more of CaSO<sub>4</sub>, Al<sub>6</sub>Si<sub>2</sub>O<sub>3</sub> and ZrO<sub>2</sub> as main carrier 0-95, and one or two of SiO<sub>2</sub> and Al<sub>2</sub>O<sub>3</sub> as subsidiary carrier 0-15%, prepd. by mixing and **sintering**. The antibacterial agent is suitable for use in construction material, **plastics**, paint, paper, wood and fabrics.

L43 ANSWER 4 OF 50 HCAPLUS COPYRIGHT 2003 ACS

AN 2001:868869 HCAPLUS

DN 136:9097

TI Electrode-supported solid state electrochemical cell

IN Sammes, Nigel; Murray, Tracy; Brown, Michael; Ziegler, Warren

PA Acumentrics Corporation, USA

SO PCT Int. Appl., 43 pp.

CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001091218	A2	20011129	WO 2001-US16796	20010522

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

US 2002028367 A1 20020307 US 2001-864070 20010522

PRAI US 2000-206456P P 20000522

AB A process for manufg. a solid oxide fuel cell comprises, in one embodiment according to the invention: forming a **plastic** mass comprising a mixt. of an electrolyte substance and an electrochem. active substance; extruding the **plastic** mass through a die to form an extruded tube; and **sintering** the extruded tube to form a tubular anode capable of supporting the solid oxide fuel cell. The process may further comprise, after **sintering** the extruded tube, layering an electrolyte onto the tubular anode; and, after layering the electrolyte, layering a cathode onto the electrolyte. In a further related embodiment, the process further comprises co-extruding more than one anode layer to form the tubular anode. Each of the anode layers may comprise a ratio of electrochem. active substance to electrolyte substance, with such ratios being higher for layers that are layered further from a surface of the anode that contacts a fuel gas than for layers that are layered closer to the fuel gas. Anode-supported tubular solid oxide fuel cells, which may be formed by such processes, are also disclosed. Addnl., electrode-supported oxygen pumps and oxygen sensors, and methods of manufg. them, are disclosed.

L43 ANSWER 5 OF 50 HCAPLUS COPYRIGHT 2003 ACS

02/13/2003

AN 2001:865001 HCAPLUS  
DN 136:13926  
TI Electroconductive films possessing functional microparticles  
IN Tamai, Kiminori; Iijima, Tadayoshi; Kobayashi, Yoichi  
PA TDK Corporation, Japan  
SO Jpn. Kokai Tokkyo Koho, 12 pp.  
CODEN: JKXXAF  
DT Patent  
LA Japanese  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001332129	A2	20011130	JP 2000-148815	20000519
PRAI	JP 2000-148815		20000519		

AB The films, which possess (ferro)magnetic, dielec., ferroelec., electrochromic, electroluminescent, light-absorbing or -reflective, antireflective, or (photo)catalytic function, contain functional microparticles suitably chosen from Sn oxide, In<sub>2</sub>O<sub>3</sub>, (Al-doped) ZnO, CdO, ATO, Sn fluoride oxide, and/or ITO and satisfy microhardness (measured by diamond pyramid indenter) 490-1470 MPa, **plastic** deformation hardness 100-500 kg/mm<sup>2</sup>, and Young's modulus 1000-5000 GPa. The films may be formed on resinous supports by coating application and compression process. The films do not require a huge amt. of binders nor high-temp. **sintering** process and are therefore low costed.

L43 ANSWER 6 OF 50 HCAPLUS COPYRIGHT 2003 ACS

AN 2001:338183 HCAPLUS  
DN 134:335622  
TI Magnetic recording medium with super thin film coating type magnetic layer adaptable to a magnetic resistance head  
IN Sasaki, Hideki  
PA Tdk Corporation, Japan  
SO Eur. Pat. Appl., 19 pp.  
CODEN: EPXXDW  
DT Patent  
LA English  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1098299	A1	20010509	EP 2000-309628	20001101
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 2001195722	A2	20010719	JP 2000-334350	20001101
PRAI	JP 1999-311733	A	19991102		

AB A magnetic recording medium for use in reprodn. with an MR head, which comprises: a nonmagnetic substrate; a nonmagnetic layer including a binder resin having dispersed therein a nonmagnetic powder on the nonmagnetic substrate; and a magnetic layer on the nonmagnetic layer, in which the magnetic layer is obtained by applying a magnetic coating material on the applied, dried and cured nonmagnetic layer, the magnetic layer includes a metal magnetic powder with a mean major axis length of from 0.03-0.08  $\mu$ m, and a satn. magnetization  $\sigma_s$  of from 100-130 Am<sup>2</sup>/kg, and the center line mean roughness Ra of the magnetic layer surface is 5 nm or less.

RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L43 ANSWER 7 OF 50 HCAPLUS COPYRIGHT 2003 ACS

AN 2001:247287 HCAPLUS  
DN 134:270131  
TI Manufacture of  $\alpha$ -alumina-based abrasive grains from a boehmite

02/13/2003

dispersion  
IN Erickson, Dwight D.  
PA 3m Innovative Properties Company, USA  
SO PCT Int. Appl., 41 pp.  
CODEN: PIXXD2  
DT Patent  
LA English  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001023324	A1	20010405	WO 2000-US2422	20000128
	W:	AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
	RW:	GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG			

PRAI US 1999-407672 A 19990928

AB The manuf. includes (a) prepg. a dispersion of liq. medium, peptizing agent, and boehmite, wherein the dispersion exhibits an .alpha.-alumina transition transformation temp. .ltoreq.1185.degree. and wherein .gtoreq.25 wt.% of the boehmite has a dispersibility value of 97.5-99%, (b) converting said dispersion to .alpha.-alumina-based ceramic abrasive grain precursor material, and (c) **sintering** the precursor to provide .alpha.-alumina-based ceramic abrasive grains having a d. of .gtoreq.95% of theor. d. wherein said abrasive grains have an av. crystallite size .ltoreq.1 .mu.m. The abrasive grains comprise also .gtoreq.0.1 wt.% of oxide selected from CeO2, Cr2O3, CoO, Dy2O3, Er2O3, Eu2O3, Fe2O3, Gd2O3, HfO2, La2O3, Li2O, MgO, MnO, Na2O, Nd2O3, **NiO**, Pr2O3, Sm2O3, SiO2, SnO2, TiO2, Y2O3, Yb2O3, ZnO, and ZrO2. The abrasive grain can be incorporated into abrasive products such as coated abrasives, bonded abrasives, non-woven abrasives, and abrasive brushes. Suitable org. binders for the abrasive products include thermosetting polymers.

RE.CNT 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L43 ANSWER 8 OF 50 HCAPLUS COPYRIGHT 2003 ACS

AN 2000:907499 HCAPLUS

DN 134:33022

TI A ceramic card for treatment of coronary heart disease and its manufacture

IN Wang, Quanjia

PA Peop. Rep. China

SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 4 pp.

CODEN: CNXXEV

DT Patent

LA Chinese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CN 1250671	A	20000419	CN 1999-119126	19990916
PRAI	CN 1999-119126		19990916		

AB The present invention relates to a ceramic card for treatment of coronary heart disease and its manuf. The card is manufd. by prepg. radiation plate from far IR ceramic material and medical **plastic** material, printing needed patterns and characters on both sides of the plate, and sealing with **plastic** films. The far IR ceramic material is prepd. by mixing Cr2O3 10-30, **NiO** 10-30, Al2O3 10-30, SiO2



02/13/2003

20-40, and MnO<sub>2</sub> 10-20%, ball milling, **sintering** at 1200-14000, and crushing. The radiation wavelength of the far IR ceramic material is 5-18 .mu.m. The card is designed to place in front of patient chest for 5-10 h/day and to receive IR energy which could improve the metab. of cardiovascular cells and tissues.

L43 ANSWER 9 OF 50 HCAPLUS COPYRIGHT 2003 ACS

AN 2000:303735 HCAPLUS

DN 133:8122

TI Densification and mechanical property of **NiO**-CoO and **NiO**-CoO-MgO system ceramics

AU Suzuki, Ryo; Matsuura, Syoichi; Nagase, Ryuichi; Suzuki, Tsuneo

CS Nikko Materials Co., Ltd., Kitaibaraki, 319-1535, Japan

SO Journal of the Ceramic Society of Japan (2000), 108(April), 412-415  
CODEN: JCSJEW; ISSN: 0914-5400

PB Ceramic Society of Japan

DT Journal

LA Japanese

AB The densification behavior and the mech. properties of **NiO**-CoO and **NiO**-CoO-MgO systems were investigated. Al<sub>2</sub>O<sub>3</sub> (2 mass%) was added to the systems as a **sintering** aid. Samples were prep'd. by hot isostatic press (HIP) treatment performed after a conventional pressureless **sintering**. The d. of the **NiO**-CoO system did not depend on CoO content. On the other hand, the densification of **NiO**-CoO system was slightly prevented by the addn. of MgO. Those samples have microstructures contg. dispersed (Ni, Co)Al<sub>2</sub>O<sub>4</sub> or (Ni, Co, Mg)Al<sub>2</sub>O<sub>4</sub> spinels in a **NiO**-CoO or **NiO**-CoO-MgO solid soln. matrixes and the addn. of CoO or MgO had no effect on the microstructure. In the **NiO**-CoO system, the bending strength increased, and the Vickers hardness increased with increasing the CoO content. Swelling around the Vickers mark, which is often obsd. in materials with **plastic** deformation characteristics, was obsd. The bending strength and Vickers hardness of the **NiO**-CoO-MgO system increased with increasing the MgO content. These results suggested that the addn. of CoO improved a brittle property of the **NiO** ceramic and the addn. of MgO increased both the strength and the hardness of the **NiO**-CoO solid soln. ceramic.

L43 ANSWER 10 OF 50 HCAPLUS COPYRIGHT 2003 ACS

AN 2000:206597 HCAPLUS

DN 132:259335

TI Procedure for the production of optimized, melt-textured bulk samples based on high-temperature superconductors of composition (Sm/Nd)Ba<sub>2</sub>Cu<sub>3</sub>O<sub>7</sub>

IN Kaiser, Axel; Bornemann, Hans

PA Forschungszentrum Karlsruhe G.m.b.H., Germany

SO Ger. Offen., 6 pp.

CODEN: GWXXBX

DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 19841574	A1	20000330	DE 1998-19841574	19980911
PRAI	DE 1998-19841574		19980911		

AB A procedure is described for the prodn. and shaping of the title superconductors with the compn. and the raw materials varied to achieve optimum compns. for applications such as magnetic levitation. Further the process duration can be kept very short and the handling simplified by applying the seed crystal before the heat treatment and using lower processing temps.

RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD

02/13/2003

ALL CITATIONS AVAILABLE IN THE RE FORMAT

L43 ANSWER 11 OF 50 HCAPLUS COPYRIGHT 2003 ACS

AN 1999:736557 HCAPLUS

DN 131:354633

TI Powder particles bonded with water glass for manufacture of **sintered** articles, molds, or cores

IN Huusmann, Ole

PA Dti Industri, Den.

SO PCT Int. Appl., 32 pp.

CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9958269	A1	19991118	WO 1999-DK249	19990505
	W:				
	AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW:				
	GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	DK 173647	B1	20010521	DK 1998-640	19980511
	AU 9935955	A1	19991129	AU 1999-35955	19990505
	EP 1085953	A1	20010328	EP 1999-917804	19990505
	R:				
	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	NO 2000005644	A	20010111	NO 2000-5644	20001108
PRAI	DK 1998-640	A	19980511		
	WO 1999-DK249	W	19990505		
AB	Metal or oxide powder is mixed with water glass binder (esp. as aq. Na silicate), followed by heating for hardening of the green preform, and further heating for <b>sintering</b> to form the local contacts between the adjacent particles. The water glass is typically aq. Na silicate having the SiO <sub>2</sub> /Na <sub>2</sub> O wt. ratio of 1.8-3.5, and is heated at 100-250.degree. for drying and hardening. The <b>sintered</b> preforms show increased resistance to humidity or steam, and are suitable for molds and cores in casting of metals or alloys, or for stable cores in the injection molding of <b>plastics</b> . The <b>sintered</b> preform from metal particles is optionally infiltrated with a molten metal or alloy to manuf. composite articles. Com. Fe powder (size 50-180 .mu.m) at 6.0 kg was mixed in cylindrical app. with 180 mL water followed with 180 g of silicate having the SiO <sub>2</sub> /Na <sub>2</sub> O wt. ratio of 3.3, and the mixing was continued to have a flowable powder with 0.7% residual moisture. The silicate-coated powder was poured into a temporary mold and heated at 150.degree. for drying and hardening, and the resulting preform was removed from mold and presintered under H <sub>2</sub> atm. for 20 min at 700.degree., followed by <b>sintering</b> for 20 min at 1120.degree. and cooling to 100.degree..				

RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L43 ANSWER 12 OF 50 HCAPLUS COPYRIGHT 2003 ACS

AN 1999:684413 HCAPLUS

DN 132:25556

TI Static and dynamic ductility of **copper** and its **sinters**

AU Wlodarczyk, Edward; Janiszewski, Jacek

02/13/2003

CS Wydział Uzbrojenia i Lotnictwa, Wojskowa Akademia Techniczna, Warsaw,  
00-908, Pol.

SO Biuletyn Wojskowej Akademii Technicznej (1999), 48(5), 75-85  
CODEN: BWATFP; ISSN: 1234-5865

PB Wojskowa Akademia Techniczna

DT Journal

LA Polish

AB The results of exptl. study on the properties of **copper** and its  
**sinters** at different conditions of quasistatic and dynamic  
deformation ( $\epsilon = 10^{-3}$ - $10^{-4}$ ) are presented. Despite its  
relatively low ductile characteristics under static conditions, the  
**sintered copper** shows higher ductility in explosive  
loading compared to the bulk **M1E copper**.

L43 ANSWER 13 OF 50 HCAPLUS COPYRIGHT 2003 ACS

AN 1999:661220 HCAPLUS

DN 132:39210

TI Stress compensating layers in ceramic-metal joints

AU Wlosinski, Wladyslaw K.

CS Warsaw University of Technology, Warsaw, 02-524, Pol.

SO Advances in Science and Technology (Faenza, Italy) (1999), 15(Ceramics:  
Getting into the 2000's, Pt. C), 1019-1025  
CODEN: ASETES

PB Techna

DT Journal

LA English

AB The diffusion processes that proceed during active brazing result in the  
formation of defects in the surface layer of the ceramic. Degradn. of  
alumina during this process is one of the factors that contribute to the  
formation of new oxide and metallic phases. In direct brazing, the  
ceramic-metal joints break by brittle fracture, irresp. of the magnitude  
of the breaking force due to loading. In considering how to eliminate  
catastrophic damage of the joints and to increase their bending strength,  
the possibility of using compensatory metallic layers was examd. This  
study was concerned with metallic layers of high plasticity, deposited on  
the ceramic with the aim to modify the character of the deformation,  
induced under load, from brittle into **plastic**. The compensatory  
layers examd. were **silver-copper** layers produced by  
the active method with the participation of titanium hydride. The  
**silver** content ranged from 10 to 80 wt.%. **Copper** was  
introduced as a mixt. of the CuO and Cu<sub>2</sub>O oxides in a proportion  
of 2-10 wt.% of the cupric oxide CuO. The metallic layers were  
**sintered** at a temp. from 950 to 1250.degree.C in nitrogen atm.  
with an oxygen content of 40 and 2 ppm, in a tunnel furnace. The  
thickness of these layers was 20-40 .mu.m. Their hardness HV ranged from  
80 to 180 kg/mm<sup>2</sup>. The samples for examg. the mech. strength had the form  
of small beams of alumina (.apprx.97% Al<sub>2</sub>O<sub>3</sub>) sized at 5 .times. 5 .times.  
22.5 mm<sup>3</sup>; they were prepd. at the ITME. The metalized front surfaces of  
the beams were joined using conventional AgCu28 braze in the nitrogen atm.  
with an oxygen content of about 10 ppm, at a temp. of 820.degree.C. The  
brazing process was conducted in graphite holders placed in a tunnel  
furnace. The deformation of the joint under load was detd. by the  
three-point bending method using a 1450-type Zwick strength machine. The  
measurement parameters were: load rate 0.1 mm/min, support spacing 36 mm.  
The mech. strength of the joints ranged from 20 to 70 MPa depending on the  
compn. of the compensatory metallic layer formed on the ceramic. The  
deformation of the joints was **plastic** in character, irresp. of  
the magnitude of the breaking force.

RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

02/13/2003

L43 ANSWER 14 OF 50 HCAPLUS COPYRIGHT 2003 ACS  
AN 1999:650231 HCAPLUS  
DN 131:275333  
TI Grooving process and seals using it  
IN Matsumoto, Kenji  
PA Senshin Zairyo Riyo Gas Generator Kenkyusho K. K., Japan  
SO Jpn. Kokai Tokkyo Koho, 5 pp.  
CODEN: JKXXAF  
DT Patent  
LA Japanese  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11277152	A2	19991012	JP 1998-83796	19980330
PRAI	JP 1998-83796		19980330		

AB The process consists of (1) making material surfaces plastically deformable by a **sintering** or thermal spray coating method and (2) grooving and sizing them by press-molding them (e.g., preferably in high temp., inert, or vacuum atm.). Dynamic-pressure grooves can be easily and accurately formed. A lubricating coating (e.g., DLC, TiN, or SiC) may be given on the plastically deformable layers. The process is effective to grooving the sliding material surfaces of seals, esp. used in high speed, high pressure, and high temp.

L43 ANSWER 15 OF 50 HCAPLUS COPYRIGHT 2003 ACS  
AN 1999:522863 HCAPLUS  
DN 131:247016

TI Preparation methods and superplastic properties of fine-grained zirconia and alumina based ceramics

AU Sakka, Yoshio; Hiraga, Keihiro  
CS National Research Institute for Metals, Tsukuba, 305-0047, Japan  
SO Nippon Kagaku Kaishi (1999), (8), 497-508  
CODEN: NKAKB8; ISSN: 0369-4577

PB Nippon Kagakkai  
DT Journal  
LA Japanese

AB Superplasticity provides the possibility of high-temp. deformation processing of dense ceramics and has the advantages of greater shape formability with better dimensional accuracy. Tensile ductility in fine-grained ceramics has been widely studied since large elongation was reported for fine-grained yttria-doped tetragonal zirconia (Y-TZ). CuO- or SiO<sub>2</sub>-doping effectively improves the ductility of Y-TZ, such that the max. elongation exceeds 1000% for 5 wt% SiO<sub>2</sub>-doped Y-TZ. However, the tensile ductility of Al<sub>2</sub>O<sub>3</sub>-based ceramics is limited to 140%. Low ductility in fine-grained alumina has been attributed to rapid dynamic grain growth accompanied by large strain hardening and heavy intergranular cavitation. The addn. of MgO or ZrO<sub>2</sub> is known to be effective in suppressing dynamic grain growth by solute drag (MgO) or 2nd-phase pinning (ZrO<sub>2</sub>), but the resultant tensile ductilities are still very small as compared with that obtained in TZ. The cavitation incurred during high temp. deformation is examd. in a MgO-doped alumina, a ZrO<sub>2</sub>-dispersed alumina and Y-TZ. A quant. anal. of the cavity densities and cavity growth rates reveals that the damage accumulation in both the MgO-doped and ZrO<sub>2</sub>-dispersed alumina is controlled strongly by a cavity nucleation process, whereas the damage in Y-TZ is controlled by cavity growth. Preliminary studies of fine-grained ZrO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub> and their composites have shown that certain requirements must be met to achieve superplasticity: fine grain size, homogeneous microstructure and the inhibition of grain growth during high-temp. deformation. These requirements are being met both through advances in powder prepn. and through novel developments in powder processing, such as colloidal processing. Particle dispersion

02/13/2003

control is the most important factor in colloidal processing. The dispersion of particles in aq. suspensions can be stabilized by electrostatic repulsion or electrosteric repulsion. Slurries of tetragonal zirconia, silica-zirconia and alumina-zirconia fine particles were prepd. by adjusting the pH value or adding appropriate amts. of polyelectrolyte. Their dense bodies were obtained through colloidal filtration, followed by cold isostatic pressing (CIP) and low-temp. **sintering**. Excellent superplastic properties were obsd. for Y-TZ, Al<sub>2</sub>O<sub>3</sub>-doped TZ, SiO<sub>2</sub>-doped TZ and ZrO<sub>2</sub>-dispersed Al<sub>2</sub>O<sub>3</sub> systems as a result of dense, fine-grained, and homogeneous microstructures. In particular, large tensile elongation exceeding 550% can be obtained for 10 vol% ZrO<sub>2</sub>-dispersed Al<sub>2</sub>O<sub>3</sub> when the initial grain size is maintained below 0.5 .mu.m. Y-TZ with a grain size of 0.3 .mu.m was successfully prepd. by **sintering** chem. synthesized powder. To obtain a dense Y-TZ with a grain size less than 0.1 .mu.m, however, a special procedure is necessary. We processed fine-grained (1) monoclinic zirconia polycrystal using a monoclinic zirconia sol prepd. by wet processing, and (2) CuO-doped TZ using a Cu-adsorbed Y-TZ suspension, where both suspensions were directly consolidated by pressure filtration without a dry powdering process.

L43 ANSWER 16 OF 50 HCAPLUS COPYRIGHT 2003 ACS

AN 1999:420656 HCAPLUS

DN 131:59671

TI Antibacterial packaging material and container for food

IN Tokuda, Yoshiyuki; Kobayashi, Mitsuru; Kawashima, Tadashi

PA Nippon Mizushori Giken K. K., Japan; LISPAC Co., Ltd.

SO Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11178899	A2	19990706	JP 1997-370155	19971222
PRAI	JP 1997-370155		19971222		

AB The material or container is prepd. by printing .gtoreq.10% of surface area of a laminate comprising a substrate of a synthetic **plastic** sheet or film (polystyrene foam) and paper or Al foil and a surface layer of a synthetic film (polystyrene) with an ink contg. .gtoreq.0.1% an electromagnetic radiation ceramic powder, made by **sintering** mainly silicon oxide and/or **aluminum** oxide, a transition element oxide of TiO<sub>2</sub>, MnO<sub>2</sub>, Fe oxide, CoO and/or NiO and an electron transfer reactive accelerator of ZnO, CuO and/or Ag<sub>2</sub>O, having a radiation wavelength 2.7-3.2 .mu.m of a near IR radiation and/or a radiation wavelength 5.0-7.4 .mu.m of a far IR radiation emissivity vs. an emissivity of a black material .gtoreq.0.8.

L43 ANSWER 17 OF 50 HCAPLUS COPYRIGHT 2003 ACS

AN 1999:244812 HCAPLUS

DN 130:260521

TI Novel metal-containing compositions, resistors and thermistors using them, and preparation of the resistors and thermistors

IN Xi, Xiaomei; Fu, Sam; Matijavesic, Goran; Brandt, Lutz; Gallagher, Catherine; Gandhi, Pradeep

PA Ormet Corporation, USA

SO PCT Int. Appl., 45 pp.

CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 1

02/13/2003

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	WO 9918581	A1	19990415	WO 1998-US19495	19980917
	W: CA, JP, KR, MX				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	US 5980785	A	19991109	US 1997-942368	19971002
PRAI	US 1997-942368		19971002		
AB	The compns. comprise .gtoreq.1 low-m.p. and .gtoreq.1 higher-m.p. metal material, a binder, and an inorg. filler and exhibit a wide range of resistivity and temp. coeff. of resistance (TCR). Compns. with low TCR are useful for resistor applications, while compns. with large TCR are useful for thermistor applications. Resistor or thermistor elements can be produced by applying compns. onto suitable substrates and alloying (curing and/or <b>sintering</b> ) the compns. During curing/ <b>sintering</b> , the metal or metal alloy powders undergo transient liq. phase <b>sintering</b> to form a continuous metallurgical network which allows for elec. conduction of the resulting element. Resistance and TCR depend on the intermetallic compds. formed as a result of the alloying/ <b>sintering</b> process. Resulting resistors and thermistor elements are stable up to .apprx.250.degree. and can be used at .apprx.-50 to .apprx.200.degree.. The metal-contg. compns. are compatible with polymer, metal, and other substrates.				
RE.CNT	4	THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD ALL CITATIONS AVAILABLE IN THE RE FORMAT			

L43 ANSWER 18 OF 50 HCAPLUS COPYRIGHT 2003 ACS

AN 1999:35228 HCAPLUS

DN 130:128666

TI Electric contacts with good **plastic** workability and their manufacture

IN Ichinose, Kazuhito; Shibata, Akira

PA Sumitomo Metal Mining Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 4 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	JP 11006022	A2	19990112	JP 1997-172901	19970613
PRAI	JP 1997-172901		19970613		
AB	The title elec. contacts are manufd. by pressure molding of mixts. of (A) powd. <b>Ag</b> composite oxides contg. .ltoreq.50 at.% (calcd. as metal) .gtoreq.1 high-m.p. metals selected from V, Cr, Nb, Mo, Ta, and W, (B) .ltoreq.20 at.% SnO2, and (C) residual <b>Ag</b> powders and <b>sintering</b> . The elec. contacts are uniformly dispersed with the above high-m.p. metals as fine oxides in <b>sintered</b> bodies. The elec. contacts have good resistance to adhesion and consumption.				

L43 ANSWER 19 OF 50 HCAPLUS COPYRIGHT 2003 ACS

AN 1999:15711 HCAPLUS

DN 130:175926

TI Preparation of **Ag**/YBa2Cu3O6+x superconducting wires by pyrophoric synthesis and extrusion

AU Yang, Suk-Woo; Lee, Young-Min; Kim, Young-Soon; Park, Jeong-Shik; Kim, Chan-Joong; Hong, Gye-Won; Shin, Hyung-Shik

CS School of Chemical Engineering, Chonbuk National University, Chonbuk, 561-756, S. Korea

SO Kongop Hwahak (1998), 9(7), 1011-1017

CODEN: KOHWE9; ISSN: 1225-0112

02/13/2003

PB Korean Society of Industrial and Engineering Chemistry  
DT Journal  
LA Korean  
AB YBa<sub>2</sub>Cu<sub>3</sub>O<sub>6+x</sub> (Y123)-**Ag** high-T<sub>c</sub> superconducting wires were fabricated by **plastic** extrusion technique using pyrophoric synthetic and mech. mixing powder with and without **Ag** addn. (20%). This method involves powder prepn. **plastic** paste making, die extrusion, binder burn-out and the **sintering** process. To fabricate a good-quality superconducting body, it is required to use homogeneous and fine-size powder as a starting materials. Y<sub>2</sub>O<sub>3</sub>-BaCO<sub>3</sub>-CuO precursor powders with/without **Ag** addn. were prepd. both by pyrophoric synthetic (PS) and mech. mixing (MM) method of raw powders. The fine size and good chem. homogeneity of the powder prepd. by PS method is attributable to the fast formation into an Y123 phase. The crit. c.d. (J<sub>c</sub>) of the Y123-**Ag** superconducting wires made by **plastic** extrusion method were in the range of 150 A/cm<sup>2</sup>-230 A/cm<sup>2</sup> depending on the characteristics of starting material powders. J<sub>c</sub> of the wire prepd. by pyrophoric synthetic powder with 20% **Ag** addn. was 230 A/cm<sup>2</sup>.

L43 ANSWER 20 OF 50 HCAPLUS COPYRIGHT 2003 ACS

AN 1997:712669 HCAPLUS

DN 127:332407

TI Tribological properties of metal-**plastic** multilayer composites under oil lubricated conditions

AU Zhang, Zhao-Zhu; Xue, Qun-Ji; Liu, Wei-Min; Shen, Wei-Chang

CS Lab. Solid Lubrication, Chinese Acad. Sci., Lanzhou Inst. Chem. Phys., Lanzhou, 730000, Peop. Rep. China

SO Wear (1997), 210(1-2), 195-203

CODEN: WEARAH; ISSN: 0043-1648

PB Elsevier

DT Journal

LA English

AB Three kinds of metal-**plastic** multilayer composites, which were composed of a steel backing, a middle layer of **sintered** porous bronze and a surface layer of polytetrafluoroethylene (PTFE) filled by Pb or **Cu<sub>2</sub>O** powders, were prepd. The friction and wear properties as well as the limiting pressure times velocity (PV) values of these metal-**plastic** multilayer composites sliding against 45 carbon steel under both dry and oil lubricated conditions were evaluated on a MPV-1500 friction tester with a steel axis rotating on a journal bearing. The worn surfaces of these metal-**plastic** multilayer composites and the transfer films formed on the surface of steel axis were examd. by electron probe microscopy anal. (EPMA). Exptl. results show that filling of Pb to PTFE reduces the friction coeff. and wear of the composite, while filling of **Cu<sub>2</sub>O** to PTFE increases the friction coeff. but decreases the wear of the composite. The friction and wear properties as well as the limiting PV values of these metal-**plastic** multilayer composites can be greatly improved with the oil lubrication. EPMA investigations show that Pb and **Cu<sub>2</sub>O** fillers preferentially transfer onto the surfaces of steel axis, which may enhance or deteriorate the adhesion between transfer films and steel surfaces. Meanwhile the transfer of these metal-**plastic** multilayer composites onto the steel surface can be greatly reduced with oil lubrication, which results in the remarkable decrease of the wear of these metal-**plastic** multilayer composites.

L43 ANSWER 21 OF 50 HCAPLUS COPYRIGHT 2003 ACS

AN 1997:570920 HCAPLUS

DN 127:213622

TI Aqueous **silver** coating compositions

02/13/2003

IN Steinberg, Jerry Irwin; Hochheimer, John Thomas; Skrzat, Michael Schlosser  
PA Heraeus, Inc., USA  
SO U.S., 9 pp., Cont.-in-part of U. S. 5,492,653.  
CODEN: USXXAM  
DT Patent  
LA English  
FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5658499	A	19970819	US 1995-544038	19951017
	US 5492653	A	19960220	US 1994-335146	19941107
PRAI	US 1994-335146	A2	19941107		

AB Coating compns. of **Ag** flakes suspended in a predominantly aq. vehicle are disclosed for laying down a coating of elec. conductive metal on resistive or dielec. substrates useful in the electronics industry. The coating compns. provide an ideal combination of high **Ag** loading and low viscosity for spray painting desired thickness coatings at high speed in a single pass. The novel compns. include the 3 basic components: **Ag** flake, H<sub>2</sub>O-sol. polymer binder, and H<sub>2</sub>O. Up to .apprx.10% of a substantially completely H<sub>2</sub>O-sol., org. co-solvent can be an optional, addnl. ingredient. The coating compns. have good green strength after drying and may be used to apply an elec. conductive base to enable electroplating **plastic** or elastomer parts. Optional **sintering** adhesives can be added to allow high-temp., permanent bonding of the **Ag** to a ceramic substrate. The compns. can include surfactants, defoamers, and antissettling agents. The coating compns. have excellent storage stability such that settled solids can be redispersed readily with brief and/or mild agitation.

L43 ANSWER 22 OF 50 HCAPLUS COPYRIGHT 2003 ACS

AN 1997:62721 HCAPLUS

DN 126:107707

TI Effect of **plastic** inclusions on properties of Al<sub>2</sub>O<sub>3</sub>/**Ag** and Al<sub>2</sub>O<sub>3</sub>/(**Ag** + ZrO<sub>2</sub>) composites

AU Bobryk, E.; Raabe, J.

CS Pol.

SO Prace Komisji Nauk Ceramicznych, Ceramika (Polska Akademia Nauk) (1995), 47(Modern Material Technologies and Testing Methods), 199-203  
CODEN: PKNCE6; ISSN: 0860-3340

PB Polskie Towarzystwo Ceramiczne

DT Journal

LA Polish

AB The influence of **plastic** inclusions, as **Ag** and CuO on the properties of Al<sub>2</sub>O<sub>3</sub>/**Ag** and Al<sub>2</sub>O<sub>3</sub>/(**Ag** + xZrO<sub>2</sub>) composites has been investigated. The exptl. results lead us to the conclusion that the different effects of the **plastic** inclusions on properties of the **sinters** obtained at 1600.degree. C depend on wettability of matrix grains, i.e., Al<sub>2</sub>O<sub>3</sub>. The strongest influence appeared on the elec. resistivity of the material. The effect of the inclusions on hardness and toughening behavior (K<sub>Ic</sub> factor) is much more complex and depends not only on wettability but on size of **sinter** grains as well.

L43 ANSWER 23 OF 50 HCAPLUS COPYRIGHT 2003 ACS

AN 1996:476438 HCAPLUS

DN 125:129994

TI Electric contact material and its preparation

IN Inada, Isato; Tsuji, Masayuki

PA Matsushita Electric Works Ltd, Japan

SO Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF



02/13/2003

DT Patent  
LA Japanese  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 08127829	A2	19960521	JP 1994-265025	19941028
PRAI	JP 1994-265025		19941028		

AB The material comprises **Ag** dispersed with a Bi-Sn mixed oxide particle, Ni oxide particle, and a particle of Bi oxide or Sn oxide (.gtoreq.80% of the oxide particles have particle size .ltoreq.1 .mu.m); and is prepd. from a powd. **Ag**-Sn-Bi alloy contg. 2-6 wt.% Bi, 1-10 wt.% Sn, and balance **Ag**; and a powd. **Ag**-Ni alloy contg. Ni 1-5 wt.% and balance **Ag**. A **Ag**-Fe alloy powder or a **Ag**-Co alloy powder is used instead of the **Ag**-Ni alloy powder in the manuf., to give an Fe oxide particle or Co oxide particle dispersion, instead of the Ni oxide particle dispersion. Quenched raw material alloy powder mixt. of av. particle size .ltoreq.45 .mu.m described above is molded by retaining a pore inside, internally oxidized, compressed, **sintered**, and **plastic** formed to give the elec. contact material. The material shows excellent contact resistivity, and resistance to melting and wear.

L43 ANSWER 24 OF 50 HCAPLUS COPYRIGHT 2003 ACS  
AN 1996:172153 HCAPLUS  
DN 125:46638  
TI Aqueous **silver** composition  
IN Hochheimer, John T.; Steinberg, Jerry I.; Skrzat, Michael S.  
PA Heraeus Inc., USA  
SO U.S., 8 pp.  
CODEN: USXXAM

DT Patent  
LA English  
FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5492653	A	19960220	US 1994-335146	19941107
	US 5658499	A	19970819	US 1995-544038	19951017
	EP 713930	A1	19960529	EP 1995-117196	19951102
	EP 713930	B1	19980408		
	R: AT, BE, DE, ES, FR, GB, IT, NL, SE				
	AT 164892	E	19980415	AT 1995-117196	19951102
	ES 2115306	T3	19980616	ES 1995-117196	19951102
	JP 09077949	A2	19970325	JP 1995-311514	19951106
	FI 9505353	A	19960508	FI 1995-5353	19951107
	CN 1134962	A	19961106	CN 1995-121553	19951107
	CN 1058741	B	20001122		
PRAI	US 1994-335146	A2	19941107		
	US 1994-544038	A	19941107		

AB Coating compns. of **silver** flake suspended in predominantly aq. vehicle is disclosed for laying down a coating of elec. conductive metal on resistive or dielec. substrates useful in the electronics industry. The coating compns. provide an ideal combination of high **silver** loading and low viscosity for spray painting desired thickness coatings at high speed in a single pass. The novel compns. include **silver** flake, water sol. polymer binder, water and a substantially completely water sol., org. co-solvent. The coating compns. have good green strength after drying and may be used to apply an elec. conductive base to enable electroplating **plastic** or elastomer parts. Optional **sintering** adhesives can be added to allow high temp., permanent bonding of the **silver** to a ceramic substrate. The coating compns. have excellent storage stability such that settled solids can be

02/13/2003

redispersed readily with brief and/or mild agitation.

L43 ANSWER 25 OF 50 HCAPLUS COPYRIGHT 2003 ACS

AN 1995:582626 HCAPLUS

DN 123:11349

TI Asbestos-free molded friction materials with increased toughness

IN Kobayashi, Isamu; Azuma, Kenji

PA Kubota Kk, Japan

SO Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 07026031	A2	19950127	JP 1993-193169	19930707
PRAI	JP 1993-193169		19930707		

AB The frictional materials contain polymeric binders, fibers, and **sinterable** inorg. compds. for C layer reinforcement and are useful for brake linings, disk brake pads, and clutch facings. A compn. comprising HP 309NS (phenolic resin) 10, Kevlar pulp 10, **Cu** fibers 7, K hexatitanate fibers (TXAX-A) 20, cashew dust (H 102) 10, graphite 8, BaSO<sub>4</sub> 25, and anatase 10 vol.% was molded and heat treated 3 h at 180.degree. to give an automobile brake lining which exhibited no C layer damage by a specified test at disk temp. 500.degree..

L43 ANSWER 26 OF 50 HCAPLUS COPYRIGHT 2003 ACS

AN 1995:506285 HCAPLUS

DN 122:246484

TI Manufacture of ceramic or **sintered** metal parts with intricate shapes

IN Kono, Norio

PA Tokin Corp, Japan

SO Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 07003303	A2	19950106	JP 1993-125339	19930428
PRAI	JP 1993-125339		19930428		

AB The process comprises prepreg. kneaded articles contg. a mixt. of ceramic (or metal) powder and thermal **plastic** resin-based binder, drawing or coining to form shaped greenwares, then removing of binder, and **sintering**. The kneaded articles are obtained by extruding and/or injection molding. In example, pre-**sintered** Ni-Zn-Cu ferrite powder (from Fe<sub>2</sub>O<sub>3</sub>-, **NiO**-, ZnO- and CuO powder) was used as the ceramic powder.

L43 ANSWER 27 OF 50 HCAPLUS COPYRIGHT 2003 ACS

AN 1994:444906 HCAPLUS

DN 121:44906

TI Immobilization in ceramic waste forms of the residues from treatment of mixed wastes

AU Oversby, V. M.; Van Konynenburg, R. A.; Glassley, W. E.; Curtis, P. G.

CS Lawrence Livermore Natl. Lab, Livermore, CA, 94550, USA

SO Materials Research Society Symposium Proceedings (1994), 333(Scientific Basis for Nuclear Waste Management XVII), 285-92

CODEN: MRSPDH; ISSN: 0272-9172

DT Journal

02/13/2003

LA English

AB The Environmental Restoration and Waste Management Applied Technol. Program at LLNL is developing a Mixed Waste Management Facility to demonstrate treatment technologies that provide an alternative to incineration. As part of that program, the authors are developing final waste forms using ceramic processing methods for the immobilization of the treatment process residues. The ceramic phase assemblages are based on using Synroc D as a starting point and varying the phase assemblage to accommodate the differences in chem. between the treatment process residues and the defense waste for which Synroc D was developed. Two basic formulations are used, one for low ash residues resulting from treatment of org. materials contaminated with RCRA metals, and one for high ash residues generated from the treatment of **plastics** and paper products. Treatment process residues are mixed with ceramic precursor materials, dried, calcined, formed into pellets at room temp., and **sintered** at 1150-1200.degree. to produce the final waste form. This paper discusses the chem. compn. of the waste streams and waste forms, the phase assemblages that serve as hosts for inorg. waste elements, and the changes in waste form characteristics as a function of variation in process parameters.

L43 ANSWER 28 OF 50 HCAPLUS COPYRIGHT 2003 ACS

AN 1994:111698 HCAPLUS

DN 120:111698

TI Secondary alkaline hydrogen-absorbing alloy batteries

IN Song, Deying; Gao, Xueping; Lin, Dongfeng; et al.

PA Nankai University, Peop. Rep. China

SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 15 pp.

CODEN: CNXXEV

DT Patent

LA Chinese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	---	-----	-----	-----
PI	CN 1071279	A	19930421	CN 1991-109300	19911001
	CN 1050011	B	20000301		
PRAI	CN 1991-109300		19911001		

AB The batteries have **sintered NiO** cathodes, Ti-Ni-based H-absorbing anodes, 5-6N KOH electrolyte contg. 1-2% LiOH, insulator separators resistant temp. change caused by the high-rate discharge of the batteries, and rectangular **plastic** or metal cases. Preferably, the anodes are  $Ti-xA_xNi_{1-y}D_y$ , where A = Mo, Zr, Mg, Ca, Ba, B, rare earth or its mixt.; D = Cr, Mn, Co, Fe, **Cu**, **Al**, B, Zr, rare earth or its mixt.;  $1 \leq x \leq 2$ ;  $0 \leq y \leq 0.75$  and are prepd. by powder metallurgy on foamed Ni screen or Ni-plated steel plates. These batteries have high capacity and energy d. and long cycle life.

L43 ANSWER 29 OF 50 HCAPLUS COPYRIGHT 2003 ACS

AN 1993:499195 HCAPLUS

DN 119:99195

TI Black spinel-type chromium **copper** manganese oxide-based pigments, and their manufacture and use

IN Wussow, Klaus; Kuske, Peter; Mansmann, Manfred; Messer, Dieter; Raede, Dieter

PA Bayer A.-G., Germany

SO Eur. Pat. Appl., 7 pp.

CODEN: EPXXDW

DT Patent

LA German

FAN.CNT 1

02/13/2003

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 545205	A1	19930609	EP 1992-119922	19921123
	EP 545205	B1	19941214		
	R: BE, CH, DE, ES, FR, GB, IT, LI, NL				
	DE 4140118	A1	19930609	DE 1991-4140118	19911205
	US 5250112	A	19931005	US 1992-979769	19921120
	ES 2067287	T3	19950316	ES 1992-119922	19921123
	JP 05254844	A2	19931005	JP 1992-341044	19921130
PRAI	DE 1991-4140118		19911205		

AB The mixed oxides, having Cr content 22-41, preferably 25-36, **Cu** content 13-25, preferably 15-22, and manganese content 7-36, preferably 14-30 wt.%, have brightness value (L\*) 57-61 (in the CIELAB color system, measured on paints after mixing with a 5-fold amt. of Titania white). In the manuf. of the pigments, comprising firing a mixt. of the oxide, hydroxide and/or carbonate of Cr, **Cu**, Mn, and, optionally, flux or **sintering** aid, at 750-900.degree., milling the material, and, optionally, washing and drying the material, the Mn source is Mn3O4. The pigments are used in paints, **plastics**, enamels, and low-melting glass compns. The Mn3O4 is manufd. by oxidn. of Mn(II) compds. A mixt. of Mn3O4 (prepn. presented) 660, Cr2O3 365, CuCO3.Cu(OH)2.xH2O 332, and Na2B4O7.5H2O 9 kg was dispersed in 1000 L water, the suspension dried, and fired in a rotary kiln in oxidizing atm. at 800.degree.. The resulting clinkers were comminuted and milled to give an intense black pigment having L\* 58.2, vs. >62 for conventional pigments.

L43 ANSWER 30 OF 50 HCAPLUS COPYRIGHT 2003 ACS  
 AN 1991:685583 HCAPLUS  
 DN 115:285583  
 TI Enhanced superplastic deformation of 2 mol% yttria-stabilized tetragonal zirconia polycrystals-alumina composite by liquid-forming additives  
 AU Xue, Liang A.  
 CS Dep. Mater. Sci. Eng., Univ. Michigan, Ann Arbor, MI, 48109, USA  
 SO Journal of Materials Science Letters (1991), 10(21), 1291-2  
 CODEN: JMSLD5; ISSN: 0261-8028  
 DT Journal  
 LA English  
 AB The superplastic deformation properties of 2 mol% Y2O3-stabilized tetragonal ZrO2 polycryst. (ZY-TZP) material contg. 20 wt.% Al2O3 and doped with 0.7 mol% liq.-forming additives were examd. This material exhibits a significantly enhanced deformability and a similar temp. dependent characteristic compared to that of CuO-doped ZY-TZP.

L43 ANSWER 31 OF 50 HCAPLUS COPYRIGHT 2003 ACS  
 AN 1991:148903 HCAPLUS  
 DN 114:148903  
 TI Composite materials and their manufacture  
 IN Kugimiya, Koichi; Sugaya, Yasuhiro; Inoue, Osamu; Satomi, Mitsuo; Hirota, Ken  
 PA Matsushita Electric Industrial Co., Ltd., Japan  
 SO Eur. Pat. Appl., 26 pp.  
 CODEN: EPXXDW  
 DT Patent  
 LA English  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 406580	A1	19910109	EP 1990-110819	19900607
	EP 406580	B1	19960904		
	R: DE, FR, GB				
	JP 04021739	A2	19920124	JP 1990-150990	19900608

02/13/2003

US 5183631 A 19930202 US 1990-535080 19900608  
PRAI JP 1989-147902 19890609  
JP 1989-175901 19890707  
JP 1989-186488 19890719  
JP 1989-253321 19890928  
JP 1989-280554 19891026  
JP 1989-288356 19891106  
JP 1989-288358 19891106  
JP 1989-288359 19891106  
JP 1989-288360 19891106  
JP 1990-4980 19900112  
JP 1990-76062 19900326  
JP 1990-101934 19900418

AB A composite material comprises a discrete phase including grains made of a magnetic metal and a continuous phase including a thin coating film made of an insulating or highly elec.-resistive material comprising super-**plastic** ceramics. In the prepn. of the composite, the film is formed on the surface of grains by sputtering or mech. alloying treatment and has a mean thickness 5-50 nm which is smaller than the mean particle size of the grains and the coated film is compacted into a green body which is densified while forming an addnl. thin film on the uncoated surface of the grains. The composite is suitable for electronic and structural materials.

L43 ANSWER 32 OF 50 HCAPLUS COPYRIGHT 2003 ACS  
AN 1990:583113 HCAPLUS  
DN 113:183113  
TI Inductor device  
IN Ikeda, Takeyoshi; Yahagi, Tadao; Kumagai, Motoi  
PA TDK Corp., Japan  
SO Jpn. Kokai Tokkyo Koho, 6 pp.  
CODEN: JKXXAF  
DT Patent  
LA Japanese  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 02060110	A2	19900228	JP 1988-210668	19880826
	JP 07024242	B4	19950315		
PRAI	JP 1988-210668		19880826		

AB The title open magnetic circuit-type inductor device comprises a coil-wound and **plastic** over-coated **sintered** core which comprises (1) a base component contg. Fe<sub>2</sub>O<sub>3</sub>, NiO, and optionally .gtoreq.1 selected from CuO, ZnO, and CoO and also (2) an additive of 0.5-3% PbO. The rate of inductance change by external stress is .ltoreq.2%.

L43 ANSWER 33 OF 50 HCAPLUS COPYRIGHT 2003 ACS  
AN 1990:407584 HCAPLUS  
DN 113:7584  
TI Fire-resistant, low-smoke chlorine-containing resin compositions **sintering** under forced combustion  
IN Tatenno, Izuru  
PA Nippon Carbide Industries Co., Inc., Japan  
SO Jpn. Kokai Tokkyo Koho, 14 pp.  
CODEN: JKXXAF  
DT Patent  
LA Japanese  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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02/13/2003

PI JP 02028234 A2 19900130 JP 1989-100290 19890421  
JP 2833706 B2 19981209  
US 5013782 A 19910507 US 1989-342027 19890424  
PRAI JP 1988-98399 19880422

AB The title compns. contain metal-contg. inorg. powder contg. .gtoreq.30% P (computed as P2O5) and fire retardant(s) chosen from Group II-V metal hydroxides and oxides. A **sinterable** plate with O index 35.0 and good weather and heat resistance and resiliency was molded from chlorinated PVC (68% Cl) 100, trioctyl phosphate 50, phosphate glass powder (39.7% P2O5) 20, **Al**(OH)3 20, and Sb2O3 20 parts.

L43 ANSWER 34 OF 50 HCAPLUS COPYRIGHT 2003 ACS

AN 1990:221547 HCAPLUS

DN 112:221547

TI Effect of **copper** oxide on the joint strength of friction welding of **copper**-tungsten **sintered** alloy to tough- pitch **copper**

AU Aritoshi, Masatoshi; Okita, Kozo; Enjo, Toshio; Ikeuchi, Kenji

CS Ind. Res. Inst. Hyogo Prefect., Suma, 654, Japan

SO Transactions of the Japan Welding Society (1989), 20(2), 139-45  
CODEN: TJWSAU; ISSN: 0385-9282

DT Journal

LA English

AB A **sintered** Cu-W alloy was friction welded to the tough-pitch **Cu** and O-free **Cu** to investigate the effects of **Cu2O** on tensile strength of the joint. The tensile strength of **Cu**-W alloy/**Cu** joints, which increased with increasing forging pressure was considerably lower than that of the **Cu**-W/O-free **Cu** joint below 250MPa. The low tensile strength of **Cu**-W/tough-pitch **Cu** joints is attributed to uncontacted spots on the fractured surface, since no uncontacted spot was obsd. in the **Cu**-W/O-free **Cu** joint above 150MPa. Tensile tests at elevated temps. and a marker expt. using alumina powder show that the difference in the uncontacted spots was explained by the difference in the degree of **plastic** flow which facilitated the attainment of intimate contact at the weld interface. Above 290 MPa, a fracture of **Cu**-W/tough-pitch **Cu** joints occurred in **Cu** immediately adjacent to the weld interface, in contrast to the heat affected zone of O-free **Cu** in **Cu**-W/O-free **Cu** joints, though the difference in the tensile strength became small. On fractured surfaces of **Cu**-W/tough-pitch **Cu** joints, **Cu2O**, and W particles picked up from **Cu**-W during friction were obsd. at dimple bottoms and acted as fracture nucleation sites. In tough-pitch **Cu** adjacent to the weld interface, the **Cu2O**, which had a preferential distribution in the axial direction in the base metal, was distributed preferentially in a direction parallel to the weld interface. The change in distribution of **Cu2O** combined with the picked-up W particles seems to cause a fracture in tough-pitch **Cu** immediately adjacent to the weld interface.

L43 ANSWER 35 OF 50 HCAPLUS COPYRIGHT 2003 ACS

AN 1989:241256 HCAPLUS

DN 110:241256

TI A process for producing an elongated superconductor

IN Yamamoto, Susumu; Kawabe, Nozomu; Awazu, Tomoyuki

PA Sumitomo Electric Industries, Ltd., Japan

SO Eur. Pat. Appl., 8 pp.

CODEN: EPXXDW

DT Patent

LA English

02/13/2003

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 308326	A1	19890322	EP 1988-402317	19880914
	EP 308326	B1	19930609		
	R: DE, FR, GB				
	CA 1325713	A1	19940104	CA 1988-577420	19880914
	US 5244874	A	19930914	US 1992-877372	19920429
PRAI	JP 1987-230639		19870914		
	US 1988-244000		19880914		
	US 1991-692609		19910429		
AB	The process includes filling a metal pipe with a precursor powder (e.g., Ba, Y2O3, and CuO) and <b>plastic</b> deformation and <b>sintering</b> of the metal pipe, the heat treatment being carried out in the presence of Ag2O in the metal pipe. The superconductor has improved mech. strength and a high crit. temp. of supercond. (39-91 K).				

L43 ANSWER 36 OF 50 HCAPLUS COPYRIGHT 2003 ACS

AN 1989:184430 HCAPLUS

DN 110:184430

TI A process for producing an elongated **sintered** superconducting article

IN Yamamoto, Susumu; Kawabe, Nozomu; Awazu, Tomoyuki; Murai, Teruyuki

PA Sumitomo Electric Industries, Ltd., Japan

SO Eur. Pat. Appl., 17 pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 302791	A2	19890208	EP 1988-402030	19880803
	EP 302791	A3	19900502		
	R: DE, FR, GB				
	JP 01152007	A2	19890614	JP 1988-193635	19880803
	JP 08025804	B4	19960313		
	CA 1326349	A1	19940125	CA 1988-573736	19880803
	US 5409890	A	19950425	US 1993-122178	19930917
PRAI	JP 1987-194037		19870803		
	JP 1987-222641		19870905		
	JP 1987-222642		19870905		
	JP 1987-222643		19870905		
	US 1988-227619		19880803		
	US 1990-571823		19900824		
	US 1991-707279		19910528		
	US 1991-804536		19911211		
AB	The process comprises filling a metal (e.g., Ag) pipe with a material (e.g., BaCo3, Y2O3, and CuO) powder, plastically deforming the metal pipe and then heat treating the filled metal pipe at a <b>sinter</b> temp. of the material powder. The <b>plastic</b> deformation step includes hot- <b>plastic</b> deformation stage. The superconducting wire (crit. temp. 77 K) produced exhibits higher crit. c.d. because a wire of <b>sintered</b> powder has a high d.				

L43 ANSWER 37 OF 50 HCAPLUS COPYRIGHT 2003 ACS

AN 1988:533772 HCAPLUS

DN 109:133772

TI High-strength optical fibers

IN Kajioka, Hiroshi; Ito, Ryoichi; Tokunaga, Toshihide

PA Hitachi Cable, Ltd., Japan

02/13/2003

SO Jpn. Kokai Tokkyo Koho, 3 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 63117922	A2	19880521	JP 1986-262801	19861106
	JP 04077691	B4	19921209		
PRAI	JP 1986-262801		19861106		

AB High-strength optical fiber is manufd. by depositing oxide of Ti, Ge, Al, Sn, or Zr on optical fiber preforms, drawing under **sintering** conditions, and optionally coating with **plastics**.  
. An optical fiber preform was coated with 20 .mu.m of TiO2, drawn under **sintering** conditions at 2000.degree. to give a 125 .mu.m optical fiber, and coated with silicone and nylon. The fracture strength was 20-30% higher than for a conventional fiber.

L43 ANSWER 38 OF 50 HCAPLUS COPYRIGHT 2003 ACS

AN 1988:207518 HCAPLUS

DN 108:207518

TI Catalysts

IN Twigg, Martyn Vincent; Sengelow, William Mauric

PA Imperial Chemical Industries PLC, UK

SO Eur. Pat. Appl., 18 pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 260826	A1	19880323	EP 1987-307471	19870824
	EP 260826	B1	19901003		
	R: BE, DE, FR, GB, IT, NL				
	US 4810685	A	19890307	US 1987-90341	19870828
	DK 8704709	A	19880311	DK 1987-4709	19870909
	DK 171038	B1	19960429		
	CA 1304068	A1	19920623	CA 1987-546467	19870909
	JP 63077548	A2	19880407	JP 1987-227522	19870910
	US 4863712	A	19890905	US 1988-292002	19881230
PRAI	GB 1986-21792		19860910		
	GB 1987-4947		19870303		
	US 1987-90341		19870828		

AB A catalyst or a precursor comprises, as the active material or as a support, a ceramic foam having a network of irregular passages, the passages having an av. min. dimension of 20-300 .mu.. The foam has a total porosity of 40-85% and an apparent d. of >0.7 g/cm3. The foam is made by forming a neg. replica of an open cell **plastics** foam by impregnation of the latter with a dispersion of the ceramic material, followed by drying and calcining the impregnated foam to remove the **plastics** material and to cause the ceramic material to **sinter**. For a steam-reforming catalyst the ceramic material may be .alpha.-Al2O3 and the active material Ni and/or Co. Thus, .alpha.-Al2O3 foam pellets (total porosity 64%, apparent d. 1.43 g/cm3) were immersed in an aq. soln. contg. Ni(NO3)2.6H2O and Al (NO3)3.9H2O for 15 min, removed from the soln., and allowed to drain for 1 h, the impregnated pellets were fired for 4 h at 450.degree., and the impregnation-firing procedure was repeated twice to give precursor pellets contg. Al2O3 88, TiO2 1, and NiO 11%; the resultant catalyst precursors were tested for steam reforming of natural gas, resulting in higher activity and easy redn. to the active catalyst.



02/13/2003

L43 ANSWER 39 OF 50 HCAPLUS COPYRIGHT 2003 ACS

AN 1987:445065 HCAPLUS

DN 107:45065

TI **Plastic** processing method for pressure- or pressureless-  
**sintered** ceramics and molded ceramics manufactured by the method

IN Fukuhara, Mikio; Katsumura, Yuji; Fukawa, Akira; Asakawa, Mutsuo;  
Urushihata, Tomio; Miyakawa, Isao; Sawada, Kazuhiro

PA Toshiba Tungaloy Co., Ltd., Japan

SO Eur. Pat. Appl., 15 pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 212659	A2	19870304	EP 1986-111790	19860826
	EP 212659	A3	19880518		
	EP 212659	B1	19901107		
	R: DE, FR, GB, IT, SE				
	JP 62052191	A2	19870306	JP 1985-188460	19850829
	JP 04060080	B4	19920925		
	JP 62148364	A2	19870702	JP 1985-290092	19851223
	JP 04069592	B4	19921106		
	US 4786448	A	19881122	US 1986-901052	19860827
	IL 79878	A1	19900209	IL 1986-79878	19860828
PRAI	JP 1985-188460		19850829		
	JP 1985-290092		19851223		

AB Pressure- or pressureless-**sintered** ceramics are manufd. by a  
**plastic** processing method, e.g., hot pressing, from compns. contg.  
Al<sub>2</sub>O<sub>3</sub>, AlN, or Al(O,N) 5-95 wt.%, and a hard carbide, nitride,  
or oxide, e.g., TiC, as balance. The ceramic body is subjected to  
**plastic** deformation at .gtoreq.1300.degree. under .ltoreq.15  
kg/mm<sup>2</sup> stress and .ltoreq.10-3/s strain rate in a reducing atm. or under  
vacuum. A grain-growth inhibitor, e.g., MgO, may be included. A ceramic  
body of the compn. 40 Al<sub>2</sub>O<sub>3</sub> and 60 wt.% Ti(CO.dwnarw..5NO.dwnarw..4500.dwn  
arw..05) was prepd. by hot pressing in Ar using a Si<sub>3</sub>N<sub>4</sub> mold to give  
**plastic** deformation at 1350.degree. with strain rate 8 .times.  
10-4/s, for 30 min at strain 10 kg/mm<sup>2</sup>. The resulting body had d. 4.53  
g/cm<sup>3</sup>, hardness (H.dwnarw.v) 2270, bending strength 86.3 kg/mm<sup>2</sup>, and  
thermal cond. 23.0 kcal/m-h-degree.

L43 ANSWER 40 OF 50 HCAPLUS COPYRIGHT 2003 ACS

AN 1987:206258 HCAPLUS

DN 106:206258

TI **Silver** oxide contact

IN Shioda, Shigeo; Kojima, Kiyokazu; Murakami, Norimasa

PA Tanaka Noble Metal Industrial Co., Ltd., Japan

SO Jpn. Tokkyo Koho, 3 pp.

CODEN: JAXXAD

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 61046530	B4	19861015	JP 1978-48155	19780422
	JP 54140169	A2	19791031		
PRAI	JP 1978-48155		19780422		

AB A **Ag**-oxide contact material resistant to fusing is prepd. by (1)  
prepg. **Ag**-oxide powders or **Ag** and oxide mixed powders  
by melt spraying; (2) compacting the powders .gtoreq.1 times and

02/13/2003

**sintering**; and (3) **plastic** working the **sintered** block.

L43 ANSWER 41 OF 50 HCAPLUS COPYRIGHT 2003 ACS

AN 1980:87150 HCAPLUS

DN 92:87150

TI Medium wave magnetic cup and drum cores for radiofrequency use

IN Jain, Gian Chand; Ganapathy, Calicut Venkanteswar; Govindaswamy, Govindaswamy Tyfr; Das, Bijoy Kishore; Kalsi, Harmahender Singh; Pushpangandan, Thottupura Ramankutty; Chandra, Subhas; Gupta, Satish Chander; Hanspal, Santhokh Singh; et al.

PA Council of Scientific and Industrial Research (India), India

SO Indian, No pp. Given

CODEN: INXXAP

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	IN 140966	A	19770108	IN 1974-CA877	19740418
PRAI	IN 1974-CA877		19740418		

AB A process is described for the manuf. of medium wave magnetic cup and drum cores for radio frequency use by mixing raw materials mainly oxides of Fe, Ni, and Zn. This was followed by presintering between 1000-1200.degree. for 2-4 h, grinding, e.g. by ball milling to submicron size, mixing **plastic** binders like PVA or polystyrene with the milled powder and then injection molding, extruding or pressing it in a die, drying the formed part, and **sintering** the part, and finishing the part to the required dimensions by grinding and thread cutting characterized in that **copper** oxide is added to the mix in the following proportion of the ingredients: Fe<sub>2</sub>O<sub>3</sub> 71 .+-. 2, **NiO** 10 .+-. 1, ZnO 17 .+-. 2 and CuO 2 .+-. 0.5 wt.%.

L43 ANSWER 42 OF 50 HCAPLUS COPYRIGHT 2003 ACS

AN 1976:111107 HCAPLUS

DN 84:111107

TI Porous ceramics-exhaust oxidation catalyst

IN Sergeys, Francis J.

PA Grace, W. R., and Co., USA

SO U.S., 11 pp. Continuation of U.S. 3,755,204.

CODEN: USXXAM

DT Patent

LA English

FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 3926851	A	19751216	US 1973-380032	19730717
	US 3755204	A	19730828	US 1970-82918	19701022
	CA 972344	A1	19750805	CA 1971-123869	19710928
	FR 2113089	A5	19720623	FR 1971-37928	19711021
	BE 774365	A1	19720214	BE 1971-109665	19711022
	NL 7114554	A	19720425	NL 1971-14554	19711022
	GB 1349400	A	19740403	GB 1971-49203	19711022
PRAI	US 1970-82918		19701022		
	US 1970-82926		19701022		
	US 1970-83020		19701022		

AB Catalysts suitable for automobile exhaust control are made by blending a polyolefin such as polyethylene [9002-88-4] with an alumina or mullite ceramic filler and mineral oil plasticizer, forming a **plastic** sheet with ribs, rolling the sheet and fusing contacting surfaces together, and extg. the mineral oil with hexane. Then the structure is

02/13/2003

**sintered** at 1300-1450.degree.F for 2 hr. Finally, the **sintered** ceramic is coated with Cu, Cr, Mn oxides, and Pd to catalyze the oxidn. of CO and hydrocarbons that pass through the porous monolith.

L43 ANSWER 43 OF 50 HCAPLUS COPYRIGHT 2003 ACS

AN 1975:481519 HCAPLUS

DN 83:81519

TI Films of **plastic**-coated inorganic powder particles

IN Isawa, Kazuo; Maejima, Masatsugu; Nagasaka, Hideo

PA Fujikura Cable Works, Ltd., Japan

SO Ger. Offen., 32 pp.

CODEN: GWXXBX

DT Patent

LA German

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 2440964	A1	19750424	DE 1974-2440964	19740827
	DE 2440964	B2	19771201		
	JP 50045023	A2	19750422	JP 1973-95924	19730827
	JP 50048012	A2	19750428	JP 1973-95926	19730827
	JP 53035767	B4	19780928	JP 1973-95925	19730827
	US 4039697	A	19770802	US 1974-499157	19740821
PRAI	JP 1973-95924		19730827		
	JP 1973-95925		19730827		
	JP 1973-95926		19730827		

AB Coatings with thickness .gtoreq.200 .mu. are prepd. by electrostatic spraying with inorg. powders, preferably surface-treated with a fatty acid or silane, each particle of which is coated with 1-15% **plastic**, and heating to fuse the **plastic**. Thus, 9.3 kg 400 mesh Cu [7440-50-8] powder, coated with 0.08% stearic acid [57-11-4] from a 0.15% EtOH soln., is stirred with 1 kg polyethylene (I) [9002-88-4] in 5 l. C2HCl3 at 70.degree. while a soln. of 1 kg poly(vinyl alc.) in 30 l. H2O warmed to 65.degree. is added. The dried powder, contg. 5% I, is sprayed on steel plate at -80 kV to give a 1 mm film which is pressed 10 sec at 150.degree. and 200 kg/cm2 and then heated 90 min at 1000.degree. to give a **sintered**, .apprx.500 .mu. Cu coating contg. no I.

L43 ANSWER 44 OF 50 HCAPLUS COPYRIGHT 2003 ACS

AN 1975:462061 HCAPLUS

DN 83:62061

TI Material with a coating of resin-coated inorganic hollow microspheres

IN Isawa, Kazuo; Maejima, Masatsugu; Nagasaka, Hideo

PA Fujikura Cable Works, Ltd., Japan

SO Ger. Offen., 27 pp.

CODEN: GWXXBX

DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 2445075	A1	19750403	DE 1974-2445075	19740920
	DE 2445075	C3	19790412		
	JP 50058137	A2	19750520	JP 1973-106712	19730921
	JP 50061432	A2	19750527	JP 1973-110674	19731002
	JP 52017532	B4	19770516		
	JP 50061433	A2	19750527	JP 1973-110675	19731002
	JP 52017533	B4	19770516		
PRAI	JP 1973-106712		19730921		

02/13/2003

JP 1973-110674 19731002  
JP 1973-110675 19731002  
AB Coatings with thickness .gtoreq.200 .mu., useful in decoration and heat and sound insulation, are applied by covering the substrate with **plastic**-coated hollow inorg. microspheres and heating to a temp. above the softening point of the **plastic** but below the **sintering** temp. of the microspheres. Thus, 100 .mu. hollow CuO [1317-38-0] microspheres (Microballoons) are coated with 5% epoxy resin and sprayed at 70 kV on steel plate preheated to 240 .+-. 50.degree. to give a 1 mm coating, adhesive strength 150 kg/cm2, which absorbs 30 phon in sound insulation testing.

L43 ANSWER 45 OF 50 HCAPLUS COPYRIGHT 2003 ACS  
AN 1970:104263 HCAPLUS  
DN 72:104263  
TI Inorganic permselective membranes  
IN Berger, Carl  
PA McDonnell Douglas Corp.  
SO U.S., 12 pp.  
CODEN: USXXAM  
DT Patent  
LA English  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	US 3497394	A	19700224	US 1963-326740	19631129
PRAI	US 1963-326740		19631129		

AB The use and prepn. of inorg. permselective membranes comprising a strong, rigid, porous plate or supportive member are described. The pores are filled with a gel of insol. hydrous metal oxide or acid salt. The membrane formed has essentially the strength of the support and the permselectivity of the inorg. ion exchange material. The supportive member may be a strong porous **plastic** or ceramic material made by flame spraying, powder pressing and **sintering**, or slip casting. The material used in the membrane includes those water-insol. solids containing 1 or more metal atoms, O atoms, and water. The hydrous oxides are not required in definite stoichiometric combination or crystal structure and may contain impurities. The oxides are of the metals of Groups IIIA and -B, IVA and -B, VA and -B, VIB, VIIB, VIII, the lanthanides and the actinides. The acid salts include water-insol. acid addition products of a hydrous metal oxide or a sol. salt of a metal cation and an acid or salt of the acid. The gel formed is pressed or sucked into the pores of the support as well as the chemical precipitation of the ion exchange gel within the pores of the member. The solution may be stabilized either by the use of urea as the hydroxide or by a chelating agent capable of holding multivalent metal ions in solution. After the support is flooded, the stability of the solution is destroyed by heat to precipitate insol. oxide gel with the pores of the base member. In an example, a hydrous gel of In<sub>2</sub>O<sub>3</sub> was precipitated from an aqueous solution by adding 1.0M NaOH to a 1.0M solution of InCl<sub>3</sub>. The gel was washed and separated. The pores of flame-sprayed zirconia membrane having a thickness of 0.7 mm and a porosity of 31% were filled with the hydrous In<sub>2</sub>O<sub>3</sub> gel by first flooding an upper surface of the membrane with the gel and then drawing the gel into the membrane by reducing pressure below the membrane to approx. 10 .mu.. The gel-filled membrane had an ion exchange capacity of 1.2 mequiv./g, a resistivity after equilibration with 0.5M NaCl at 25.degree. of 145 ohm cm and a modulus of rupture of 4200 psi. The gel filling the pores of the membrane accounts for its ion exchange capacity while the inner core structure provides its high strength.

L43 ANSWER 46 OF 50 HCAPLUS COPYRIGHT 2003 ACS  
AN 1969:108472 HCAPLUS

02/13/2003

DN 70:108472  
TI Preparation and properties of stainless steel powder  
AU Borok, B. A.; Shchegoleva, R. P.; Golubeva, L. S.  
CS Tsentral. Nauch.-Issled. Inst. Chern. Met. im. Bardina, Moscow, USSR  
SO Poroshkovaya Metallurgiya (Kiev) (1969), 9(3), 1-9  
CODEN: PMANAI; ISSN: 0032-4795  
DT Journal  
LA Russian  
AB The method of a joint redn. of oxide and metal powders by  $\text{CaH}_2$  was used to prep. the stainless steel OKh23N28M3D3T powder. The charge compn. was: carbonyl Fe 0.424,  $\text{Cr}_2\text{O}_3$  0.337, Ni 0.280, Mo 0.030, **Cu** 0.030,  $\text{TiO}_2$  0.01, and  $\text{CaH}_2$  0:50 kg. The initial high content of C in carbonyl Fe was reduced by a preliminary decarburizing annealing in a H atm. at 1175.degree. for 8 hrs. Chem. anal. of the steel powder points to a loss of **Cu** during the redn. process; this depends on the type of Ni powder used, being much higher with electrolytic powder. X-ray investigations show a single phase austenitic structure, but after etching new phase sepns. are observed in the inner portion of some particles. The highest amt. of this phase is found in powders with a low **Cu** content. It contains high amts. of ferrite-forming elements as Cr and Mo. It might be the intermetallic .sigma.-phase (HV 670-870) which usually sep. when annealing OKh23N28M3D3T at medium temps. The observed loss of **Cu** seems to be provoked by the reaction **Cu**-Ca leading to the formation of an alloy easily sol. in dil. HCl that is used to rinse the pulp. Test specimens prepd. by **sintering** and forging at 800-1200.degree. exhibit an austenitic structure with uniformly distributed carbide sepns. both in as-forged and as-quenched state. When annealing, the steel becomes brittle and its hardness increases owing to the sepns. of the intermetallic. To elucidate the effect of **Cu** on the mech. properties of **sintered** samples its content was varied 0.3-1.25%. Samples contg. higher amts. of **Cu** are hardly deformable in spite of their elevated d.; during forging cracks appear immediately. Specimens without **Cu** exhibit a satisfactory deformability. When alloying Kh23N28 with 0-3% Mo the stress-rupture and yield strength increase while the notch toughness is lowered; **plastic** properties seem not to be influenced. A similar behavior is found after alloying with Ti probably owing to the formation of carbonitrides. The steels Kh23N28, Kh23N28M3, and Kh23N28M3T are composed of stable austenite which does not decomp. after 4 hrs. at 950.degree.. Consequently, the hypothesis that the steel embrittlement might be provoked by a low **Cu** content is not confirmed. Small amts. of **Cu** (0.115%) lower the steel ductility. To prevent such a deterioration **Cu** was introduced into the charge in different ways to attain a higher degree of its soly. in Ni (annealing in a H atm. of Ni + **Cu**, **NiO** + **Cu**, and **NiO** +  $\text{CuO}$  mixts.). In all these cases the steel deformability is extremely low so that no mech. testing is possible. The **sinterability** of powder compacts is not improved when **Cu** is deposited on the surface of particles from a  $\text{CuSO}_4$  soln. The corrosion resistance of filters made from OKh23N28M3D3T is very high in aggressive media exceeding that of Kh18N15 and Kh18N12M2T.

L43 ANSWER 47 OF 50 HCAPLUS COPYRIGHT 2003 ACS  
AN 1966:426838 HCAPLUS  
DN 65:26838  
OREF 65:4954h,4955a-c  
TI Cadmium and indium tantalate as possible control materials for high-temperature reactors  
AU Haessner, F.; Petzow, G; Preisler, E  
CS Max-Planck-Inst. Metallforsch., Stuttgart, Germany  
SO Proc. Intern. Conf. Peaceful Uses At. Energy, 3rd, Geneva, 1964 (1965),

02/13/2003

Volume 9, 430-8  
From: Nucl. Sci. Abstr. 18(21)5136(1964).

DT Report  
LA English

AB Cd and In tantalates can be used as absorber materials in high-temp. reactors. Compared with B or B-contg. materials, which have been proposed almost exclusively for higher temps., the tantalates have the advantage in absorbing n by an (n,.gamma.) reaction instead of art (n,.alpha.) reaction. In relation to Hf, the lanthanons or their oxides or other compds., which are also interesting materials for higher temps., the tantalates are easily available at relatively low costs. Mixts. of Cd and In tantalates possess an advantageous absorption spectrum for n as well in the thermal as in the epithermal region. This spectrum is comparable with that of Hf or of the **Ag**-In-Cd alloys. The double oxides are, with respect to Ta, also interesting for fast reactors since only the isotope 10B can compete with Ta in that energy range (0.01 Mev. to some Mev.). Cd2Ta2O7 has good thermal resistance to 1000.degree., In2Ta2O8 to 1300.degree.. The tantalates show no phase transformation between room temp. and 950.degree. (the highest temp. investigated). The double oxides can be prepd. easily by annealing pure CdO and Ta2O5 or In2O3 and Ta2O5. Cd tantalate is compatible with **Ag** and **Cu** and, up to 700.degree., with Ni; In tantalate is completely compatible with **Ag**, **Cu**, and Ni, and up to 700.degree. with Mo and to some degree with Fe. For an estn. of the behavior of the materials under reactor conditions the daughter products that originate by n absorption were considered. Whereas 113Cd transforms into stable 114Cd, Ta is transmuted into W and In into Sn. Both daughter products can bind more O in their most stable valence states than the parent elements. Therefore, the redn. of Cd2+ to metal can be expected while In tantalate should be stable. This was confirmed by expts. with **SnO** and **WO2** addns. to Cd tantalate. Addn. of **Cu+** oxide to the compds. can suppress this effect. For the practical use of the tantalates, the workability of the pure compds. as well as of a cermet is of importance. While **sintered** pellets of the pure tantalates that were originally pressed at room temp. cannot be shaped by **plastic** deformation, there is no difficulty in deforming tantalate-**Cu** cermets in a suitable can up to high degrees. Even after high degrees of deformation, the distribution of the tantalate particles remains even, and no clustering occurs. This even distribution is not disturbed by a recrystn. treatment of the deformed cermet. Investigations of the behavior of the tantalates under reactor conditions were initiated.

L43 ANSWER 48 OF 50 HCAPLUS COPYRIGHT 2003 ACS

AN 1964:60045 HCAPLUS

DN 60:60045

OREF 60:10470g-h

TI Solid propellant composition and propulsion with metal oxides

IN McLain, Joseph H.; Rittenhouse, Charles T.

PA Olin Mathieson Chemical Corp.

SO 3 pp.

DT Patent

LA Unavailable

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 3118275		19640121	US	19600212

AB A solid propellant mixt. for jet propulsion is described which consists of an intimate blend of a light metal, such as **Al** ( 10-40 parts), and a metal oxide, such as CuO or MnO2 (90-60 parts). A wide variety of grain shapes capable of withstanding ordinary handling can be made by pressing the mixt. at 500-5000 lb./in.2 abs. in a **sintering** mold after heating and allowing air to escape. A vacuum is used to aid in

02/13/2003

removing the trapped air. These compns. burn uniformly when ignited, without disintegration. To improve mech. strength and burning characteristics, 1-15% of a binder, such as cellulose nitrate, linseed oil, **plastics**, resins, natural rubber, or a mixt. of natural and synthetic rubber, can be added. The binder-contg. compns. are extruded into the desired size and shape. The following compn. was found to perform satisfactorily in a rocket motor: finely divided **Al** 20, **CuO** 80, a 6% cellulose nitrate soln. 20 parts. Light metals, such as **Li** and **Be**, (10-40%) and oxides from the group **Co**, **Mn**, **Cr**, and **Cu** (45-89%) can also be used with a binder (1-15%).

L43 ANSWER 49 OF 50 HCAPLUS COPYRIGHT 2003 ACS

AN 1959:77034 HCAPLUS

DN 53:77034

OREF 53:13923b-g

TI **Sintering** of pure oxides and oxides with additives

AU Pampuch, R.

SO Prace Inst. Hutnic. (1958), 10, 333-47

DT Journal

LA Russian/English

AB The role of the surface energy in the 1st stages of the **sintering** process in the solid phase of pure oxides, the possibility of predicting the effect of additives on the **sintering** of these oxides, and the effect of their structural characteristics are studied, taking the temp. (T<sub>8</sub>) of the beginning of **sintering**, i.e., the temp. of sudden contraction of the specimen tested, as criterion of the study. The oxides, e.g. .alpha.-**Al**2O<sub>3</sub>, **BeO**, **CaO**, **CeO**<sub>2</sub>, **Cr**2O<sub>3</sub>, **CuO**, .alpha.-**Fe**2O<sub>3</sub>, **MgO**, **NiO**, **TiO**<sub>2</sub>, **ThO**<sub>2</sub>, **ZnO**, **ZrO**<sub>2</sub>, and **Y**2O<sub>3</sub>, sepd. into 4- and 14-.mu. fractions in a short column elutriator, are formed into cubes 3 mm. on a side under a pressure of 10 kg./sq. cm., and the 4-.mu. fraction also under 3500, and **sintered** by heating to 1000-1600.degree. at a rate of 7.degree./min. T<sub>8</sub>, observed continuously in a Leitz heating microscope, are (.+-10.degree.), 1200.degree., -, 1205.degree.; 1100.degree., 1260.degree., 980.degree.; 900.degree., -, -; 870.degree., -, -; 1370.degree., -, -; 890.degree., -, -; 855.degree., -, -; 975.degree., 1200.degree., 925.degree.; 1000.degree., 1250.degree., -; 900.degree., -, -; 875.degree., 1015.degree., 870.degree.; 850.degree., -, -; 895.degree., -, -; and 980.degree., 1075.degree., -; resp. The exptl. results for the 3 kinds of cubes form 3 separate straight lines, resp., in the plot T<sub>8</sub>/(surface energy), except for .alpha.-**Al**2O<sub>3</sub>, for which data of surface energy are inconclusive. Factors which cause a decrease of the surface energy accelerate the **sintering** process. The relation between the **sintering** ability, the structure of the oxides, and the ionic characteristic of the bond metal-O proves the existence of groups of oxides, e.g. .alpha.-**Fe**2O<sub>3</sub>, **Cr**2O<sub>3</sub>, and .alpha.-**Al**2O<sub>3</sub>; **NiO**, **ZnO**, **BeO**, **MgO**, and **CaO**; and **ZrO**<sub>3</sub>, **CeO**<sub>2</sub>, and **ThO**<sub>2</sub>. Within these groups the **sintering** ability decreases with decrease of the electronegativity of the bond. It becomes apparent from **sintering** expts. of **BeO** with addn. of 2% **Al**2O<sub>3</sub>, **BaO**, **B**2O<sub>3</sub>, **CaO**, **MgO**, **NiO**, **P**2O<sub>5</sub>, **SiO**<sub>2</sub>, **ThO**<sub>2</sub>, and **ZnO** (T<sub>8</sub> 1100.degree. (4 .mu.), 1200, 1120, 1050, 1080, 1120, 1070, 1080, 1220, and 1270, resp.) that the change of T<sub>8</sub> is not related to the formation of a solid phase. Expts. with **Al**, **Th**, **Zr**, **Be** and **Mg** oxides show that additives having a lower electronegativity of the metal-O bond than the basis oxide, in general of 1.6-2, improve the **sintering** process. Mass transfer by diffusion or by evapn.-condensation as mechanism of the process of **sintering** in the solid phase are reviewed and considered as unsatisfactory in view of the exptl. data. P. suggests, however, that mass transfer by microscopic flow, i.e., changes of the **plastic** limits, effected by the surface tension, could reasonably be accepted as the mechanism of the process.

02/13/2003

L43 ANSWER 50 OF 50 HCAPLUS COPYRIGHT 2003 ACS

AN 1958:34380 HCAPLUS

DN 52:34380

OREF 52:6105f-h

TI Development of metal-ceramics from metal-oxide systems

AU Baxter, J. R.; Roberts, A. L.

SO Iron Steel Inst. (London), Spec. Rept. (1956), Volume Date 1954, No. 58, 315-24

From: Met. Abstr. (in J. Inst. Metals) 22, 880(1955).

DT Journal

LA Unavailable

AB The strength of WC bonded with Co is due mainly to the wetting of carbide particles with molten Co and the formation of a strong bond on cooling. By analogy, strong metal-ceramic systems will be obtained. The wetting of **sintered** Al<sub>2</sub>O<sub>3</sub> pellets by molten binary Ni and Co alloys was assessed by measurements of the contact angle of a sessile drop melted in contact with the Al<sub>2</sub>O<sub>3</sub> in an atm. of dry H<sub>2</sub>. It was found that only Ni alloys with 5-10% Ti bonded strongly. **Sintered** compacts made from Al<sub>2</sub>O<sub>3</sub> bonded with Ni-Ti and Ni-Zr alloys had lower bend strength, but increased thermal shock resistance, compared with pure Al<sub>2</sub>O<sub>3</sub>. Hot pressing at 1500.degree. indicated that promising properties might be obtained in Al<sub>2</sub>O<sub>3</sub> bonded with a Ni-0.25% Bi alloy which had either a continuous metallic or nonmetallic phase, according to the method of production. The system **Ag-Cu<sub>2</sub>O-Al<sub>2</sub>O<sub>3</sub>** was also investigated, and high bend strength with a linear stress:strain ratio was obtained with **Cu<sub>2</sub>O**-coated Al<sub>2</sub>O<sub>3</sub> with >50% **Ag**, where the metal phase was continuous. The absence of **plastic** deformation in the bond is ascribed to triaxial stresses. 26 references.



02/13/2003

L44 ANSWER 1 OF 21 HCAPLUS COPYRIGHT 2003 ACS

AN 2001:814381 HCAPLUS

DN 135:365294

TI Heat-releasing materials for semiconductor devices and process and apparatus for molding materials thereof

IN Hori, Makoto; Suzumura, Takashi; Fuyu, Yoshihei; Kuroki, Kazuma

PA Hitachi Cable, Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001313356	A2	20011109	JP 2000-132365	20000501
PRAI	JP 2000-132365		20000501		

AB The title heat-releasing molded materials are made from a **sintered** mixt. contg. powd. metal and powd. inorg. compd. having low thermal expansion coeff. and have a trapezoidal cross-section. The inorg. compd. may contain 10-80 vol.% **Cu<sub>2</sub>O**. The trapezoidal cross-section gives the materials easy releasing from its casting die.

L44 ANSWER 2 OF 21 HCAPLUS COPYRIGHT 2003 ACS

AN 2000:803881 HCAPLUS

DN 133:338626

TI **Composite material** for semiconductor devices and electrostatic adsorbers

IN Kondo, Yasuo; Okamoto, Kazutaka; Abe, Terunobu; Kaneda, Junya; Aono, Yasuhisa; Saito, Ryuichi; Koike, Yoshihiko

PA Hitachi, Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 20 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000313905	A2	20001114	JP 1999-121285	19990428
PRAI	JP 1999-121285		19990428		

AB A **composite material** manufd. by isotropic pressing and **sintering** consists of metal particles and inorg. particles having a thermal expansion coeff. lower than that of the metal. Of the inorg. particles, 50-95% are connected to each other forming lumps of complex shape. The preferred metal and inorg. material are **Cu** and **Cu oxide**. The composite is suitable for heat sinks of semiconductor devices or electrode sheets of electrostatic adsorbers.

L44 ANSWER 3 OF 21 HCAPLUS COPYRIGHT 2003 ACS

AN 2000:616586 HCAPLUS

DN 133:201923

TI Dielectric ceramic compositions, dielectric ceramic parts, and their manufacture

IN Tsukiyama, Yoshio

PA Sumitomo Metal Industries, Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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02/13/2003

PI JP 2000239061 A2 20000905 JP 1999-41476 19990219  
PRAI JP 1999-41476 19990219  
AB The compns. consist of  $\text{BaO} \cdot (a-x-y)\text{TiO}_2 \cdot x\text{GeO}_2 + y\text{SiO}_2$  ( $a = 4.0-4.6$ ;  $x + y = 0.15-0.8$ ;  $0.2 \leq x/(x+y) \leq 100$ , **Cu** (calcd. as  $\text{CuO}$ )  $0.5-2$ ,  $\text{Zn}$  (calcd. as  $\text{ZnO}$ )  $0.5-4$ , and  $\text{B}$  (calcd. as  $\text{B}_2\text{O}_3$ )  $0.3-2$  wt. parts ( $\text{ZnO} \leq \text{CuO}$ ). Dielec. ceramic parts comprising the compns. and co-sintered Ag internal electrodes are also claimed. The ceramics are manufd. by calcination of raw **material mixts.** contg. oxides or mixed oxides of Ba, Ti, and Ge and/or their precursors at  $950-1150^\circ\text{C}$ , mixing of the rest of the oxides, mixed oxides, and/or their precursors, forming, and firing at  $\leq 960^\circ\text{C}$ .

L44 ANSWER 4 OF 21 HCAPLUS COPYRIGHT 2003 ACS

AN 1997:530362 HCAPLUS

DN 127:194190

TI Microstructure and mechanical properties for alumina/**copper** nanocomposites

AU Oh, Sung-Tag; Sekino, Tohru; Niihara, Koichi

CS ISIR, Osaka University, Ibaraki, 567, Japan

SO Ceramic Engineering and Science Proceedings (1997), 18(3), 329-336

CODEN: CESPDK; ISSN: 0196-6219

PB American Ceramic Society

DT Journal

LA English

AB An optimum route to fabricate the  $\text{Al}_2\text{O}_3/\text{Cu}$  composite with sound microstructure and desired mech. properties was investigated. The composite having a nano-sized **Cu**-dispersoid was successfully fabricated by controlled hot-pressing process using  $\text{Al}_2\text{O}_3$  and  $\text{CuO}$  powder **mixt.** as starting **materials**. The composite exhibited the max. fracture strength as 819 MPa and enhanced toughness compared with monolithic  $\text{Al}_2\text{O}_3$ . The influence of processing condition and added **Cu**-phase upon the mech. properties was discussed based on the obsd. microstructural characteristics.

L44 ANSWER 5 OF 21 HCAPLUS COPYRIGHT 2003 ACS

AN 1997:464289 HCAPLUS

DN 127:116218

TI Grain boundary-insulated strontium titanate semiconductor ceramic composition and its manufacture

IN Kanda, Osamu

PA Sumitomo Metal Industries, Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 09171908	A2	19970630	JP 1995-330253	19951219
PRAI	JP 1995-330253		19951219		
AB	The compn. has a formula $(\text{Sr}_{1-x-y}\text{Ca}_x\text{Pb}_y)\text{a}(\text{Ti}_{1-z}\text{A}_z)\text{bO}_3$ ( $\text{A} = \text{Nb}, \text{Sb}, \text{Ta}, \text{V}$ ; $0 < x \leq 0.25$ ; $0 < y \leq 0.10$ ; $0.001 \leq z \leq 0.010$ ; $0.990 \leq a/b < 1.000$ ) and contains a crystal grain boundary layer contg. Cr, <b>Cu</b> , and/or Mn; B and/or Bi; and Ta, O; and Ti. The compn. is manufd. by (1) <b>sintering</b> a mixt. of 100 parts of a Sr titanate-base raw <b>material mixt.</b> and 0.05-0.15 parts of $\text{Ag}_2\text{O}$ , (2) coating a mixt. of 55-84 mol% $\text{Na}_2\text{Ti}_3\text{O}_7$ , 15-40 mol% of $\text{B}_2\text{O}_3$ and/or $\text{Bi}_2\text{O}_3$ , and 1-5 mol% of $\text{Cr}_2\text{O}_3$ , $\text{CuO}$ , and/or $\text{MnO}_2$ on the formed ceramic for thermal diffusion. The compn. is suited for varistors for suppressing noise.				

02/13/2003

L44 ANSWER 6 OF 21 HCAPLUS COPYRIGHT 2003 ACS

AN 1997:128036 HCAPLUS

DN 126:147428

TI Manufacture of ferroelectric-ferromagnetic **composite materials**

IN Mansour, Said A.; Micheli, Adolph L.; Mantese, Joseph V.; Dungan, Dennis F.

PA General Motors Corporation, USA

SO U.S., 6 pp.

CODEN: USXXAM

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5601748	A	19970211	US 1996-626088	19960401
PRAI	US 1996-626088		19960401		

AB In this method, in which the ferroelec. constituent consists of .gtoreq.1 of BaTiO<sub>3</sub>, SrTiO<sub>3</sub>, and Ba<sub>3</sub>Sr<sub>1-x</sub>TiO<sub>3</sub>, and the ferromagnetic constituent is an AFe<sub>2</sub>O<sub>4</sub> ferrite (A = **Cu**, or **Cu** with .gtoreq.1 of Li, Mg, Mn, Ni, and Zn), the ferroelec. material (grain size approx. 1-5 .mu.m) is mixed with .gtoreq.2 fluxing constituents of like grain size and selected from Li compds. and the oxides or oxide precursor compds. of Ba and **Cu**, the ferroelec. and fluxing **material mixt.** is calcined, the calcined mixt. is comminuted to sp. surface area approx. 1.5-5.0 m<sup>2</sup>/g, the fluxed ferroelec. particles are mixed with particles of a ferromagnetic material (grain size approx. 1-5 .mu.m) in vol. ratio (30-70):100 ferroelec. and balance ferromagnetic **material**, and the **mixt.** is **sintered** at 1060-1150.degree. to form the ferroelec.-ferromagnetic composite consisting essentially of a 1st phase of grains of the ferroelec. interconnected with a 2nd phase of grains of ferromagnetic material, such that each of the ferroelec. and ferromagnetic phases retain their distinct electromagnetic properties. The composites are used as electromagnetic interference attenuators.

L44 ANSWER 7 OF 21 HCAPLUS COPYRIGHT 2003 ACS

AN 1996:655697 HCAPLUS

DN 125:306985

TI Wettability and reactivity of silicon carbide by **copper** and **copper** alloys (Zn, Si, Ti)

AU Marin, J.; Lisboa, J.; Olivares, L.; Aguirre, P.; Becerra, R.; Piderit, G.; Maier, H. R.; Pfaff, E. M.

CS Comision Chilena de Energia Nuclear, Santiago, Chile

SO Nucleotecnica (1995), 15(29), 19-27

CODEN: NUCLEQ; ISSN: 0716-0054

PB Comision Chilena de Energia Nuclear

DT Journal

LA English/Spanish

AB The alloys used in this work were **Cu-Ti**, **Cu-Zr**, **Cu-Sn**, **Cu-Sn-Zr**, pure **copper** and a mixt. of **Cu-Cu<sub>2</sub>O**. DTA-TG measurements applied to pressed SiC-alloy mixts. showed reactivity in all mixts., particularly during the cooling tests of the specimens. The formation of Cu<sub>4</sub>Si was identified and the highest reactivity was shown by the **Cu-Ti** alloy. The effect of the unreacted Si metal (on the wettability of the RB-SiC by the molten **Cu-Alloy**) is not well established yet. SEM observations and MPA studies of infiltrated RB SiC ceramic as ceramic forms, porous pre-**sintered** ceramics of SiC particle in the molten alloys showed close interface contacts, good flow and filling level. **Cu-Sn**

02/13/2003

alloy was the only case without secondary phase formation at the interface. The **Cu-Ti**, **Cu-Zr**, **Sn** and **Cu-Zr** alloys showed an enrichment of the reactive metal at the interface when the **Cu** contents were lowered. The reactive metal detd. the **Si** contents at the interface, and no evidence of **Si** at the **SiC** metal interface was found for the **Cu-Sn-Zr** alloy. In the metallic zone, the MPA anal. showed the segregation of a secondary phase contg. **Si**, **Cu**, and **Zr**. XRD anal. provided the mineralogical compn. of the phases. The exptl. results support the possibility of prodn. of **copper-matrix based SiC-composite materials**.

L44 ANSWER 8 OF 21 HCAPLUS COPYRIGHT 2003 ACS

AN 1996:614225 HCAPLUS

DN 125:282061

TI Wettability and reactivity of silicon carbide by **copper** and **copper** alloys (**Zr**, **Sn**, **Ti**)

AU Marin, J.; Lisboa, J.; Olivares, L.; Aguirre, P.; Becerra, R.; Piderit, G.; Maier, H. R.; Pfaff, E. M.

CS Chilean Commission Nuclear Energy, Santiago, Chile

SO Proceedings of the Copper 95--Cobre 95 International Conference, Santiago, Nov. 26-29, 1995 (1995), Volume 1, 513-522. Editor(s): Diaz, Carlos. Publisher: Canadian Institute of Mining, Metallurgy and Petroleum, Montreal, Que.

CODEN: 63KSAV

DT Conference

LA English

AB The alloys used in this work were **Cu-Ti**, **Cu-Zr**, **Cu-Sn**, **Cu-Sn-Zr**, pure **copper** and a mixt. **Cu-Cu<sub>2</sub>O**. DTA-TG measurements applied to pressed **SiC**-alloy mixts. showed reactivity in all mixts., particularly during the cooling tests of the specimens. The formation of **Cu<sub>4</sub>Si** was identified and the highest reactivity was shown by the **Cu-Ti** alloy. The effect of the unreacted **Si** metal (on the wettability of the **RB-SiC** by the molten **Cu-Alloy**) is not well established yet. SEM observations and MPA studies of infiltrated **RBSiC**-Ceramic as ceramic foams, porous pre-sintered ceramics of **SiC**-Particle in the molten alloys showed close interface contacts, good flow and a filling level. **Cu-Sn** alloy was the only case without secondary phase formation at the interface. The **Cu-Ti**, **Cu-Zr-Sn** and **Cu-Zr** alloys, showed an enrichment of the reactive metal at the interface when the **Cu** contents were lowered. The reactive metal detd. the **Si** contents at the interface, and no evidence of **Si** at the **SiC**-metal interface was found for the **Cu-Sn-Zr** alloy. In the metallic zone, the MPA anal. showed the segregation of a secondary phase contg. **Si**, **Cu** and **Zr**. XRD anal. provided the mineralogical compn. of the phases. All these exptl. results support pos. the potential prodn. of **copper-matrix based SiC-composite materials**.

L44 ANSWER 9 OF 21 HCAPLUS COPYRIGHT 2003 ACS

AN 1995:910939 HCAPLUS

DN 123:356865

TI Oxide superconductor-metal **composite materials**

IN Sumya, Keiji

PA Hitachi Chemical Co Ltd, Japan

SO Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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02/13/2003

PI JP 07235226 A2 19950905 JP 1994-22944 19940222  
PRAI JP 1994-22944 19940222

AB The **composite material** consists of a metal support coated with a metal layer, a superconductor top layer, and an laminated interlayer comprising the superconductor and the metal, in which superconductor content increases discretely from bottom up. The metal support may be of Ni or a Ni-based alloy and the metal layer may be of Ag or a Ag-based alloy. The **composite material** is prepd. by laminating, on a metal support, a metal green sheet, and interlayer green sheets contg. superconductor particles which are partially molten in rolling or after rolling. The **composite material** has no cracks and delamination in its surface between the superconductor and the metal.

L44 ANSWER 10 OF 21 HCAPLUS COPYRIGHT 2003 ACS

AN 1995:504272 HCAPLUS

DN 123:158795

TI Magnetolectric PZT/ferrite **composite materials**

AU Lopatin, Sergey; Lopatina, Irina; Lisnevskaya, Inna

CS Endress & Hauser GmbH & Co., Maulburg, D-79689, Germany

SO Ferroelectrics (1994), 162(1-4), 411-16

CODEN: FEROA8; ISSN: 0015-0193

PB Gordon & Breach

DT Journal

LA English

AB The PZT/ferrite **composite materials** of different types of connectivity were prepd. and studied. The firing of powder mixts., hot pressing, alternative slicing of piezoelec. ceramic and ferrite and other techniques were used to produce the magnetoelec. composites. The most high values of the magnetoelec. coeff.  $\Delta E/\Delta H$  were found in **sintered** mixts. of PZT powders with ferrite and sliced materials with 35-55% of ferrite. The magnetoelec. response sharply increased with increase of bias magnetic field up to 0.5-1.0 kOe. Meanwhile, the magnetoelec. composites showed a significant piezoelec. sensitivity and this property is to be taken into account when sensors are being designed.

L44 ANSWER 11 OF 21 HCAPLUS COPYRIGHT 2003 ACS

AN 1994:122501 HCAPLUS

DN 120:122501

TI **Sintered composite materials** for electrical

contacts for switching apparatus used in energy technology

IN Hauner, Franz

PA Siemens A.-G., Germany

SO Ger. Offen., 4 pp.

CODEN: GWXXBX

DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	DE 4201940	A1	19930729	DE 1992-4201940	19920124
	JP 07503097	T2	19950330	JP 1993-512847	19930122
	US 5486222	A	19960123	US 1994-256643	19940718
PRAI	DE 1992-4201940		19920124		
	WO 1993-DE52		19930122		

AB The title materials comprise Ag-SnO<sub>2</sub>-Bi<sub>2</sub>O<sub>3</sub>-CuO materials incorporating an addnl. oxide contg. Fe and a Group VI element (e.g., FeWO<sub>4</sub>).

L44 ANSWER 12 OF 21 HCAPLUS COPYRIGHT 2003 ACS

AN 1993:565104 HCAPLUS

DN 119:165104

02/13/2003

TI **Sintering** charge for iron-base **composite material**

IN Dorofeev, Yuriy G.; Mamedov, Arif T.; Bagirov, Dzhavid A.; Ashurova, Sevda A.

PA N-proizv ob "bakkonditsioner", USSR

SO U.S.S.R.

From: Izobreteniya 1992, (26), 49.

CODEN: URXXAF

DT Patent

LA Russian

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	SU 1747243	A1	19920715	SU 1990-4815853	19900418
PRAI	SU 1990-4815853		19900418		

AB Processing properties are improved when the **sintering** charge based on Fe powder contains powd. graphite 0.8-1.0, aq. **Cu<sub>2</sub>O** paste (as the **Cu**-contg. component) 0.9-3.6, Ni oxide (as the Ni source) 0.005-0.02, ethylene glycol (as plasticizer) 0.1-0.4, and paste Syurpriz (as plasticizer) 0.0015-0.006%.

L44 ANSWER 13 OF 21 HCAPLUS COPYRIGHT 2003 ACS

AN 1992:562130 HCAPLUS

DN 117:162130

TI **Copper**-based electric contact material

IN Dong, Yuanyuan; Ouyang, Jinlin; Wang, Chengming; et al.

PA Gansu Province, Institute of Mechanical Science, Peop. Rep. China

SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 6 pp.

CODEN: CNXXEV

DT Patent

LA Chinese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CN 1059619	A	19920318	CN 1991-108905	19910911
PRAI	CN 1991-108905		19910911		

AB A composite **Cu**-based elec. contact material is prepd. by providing a mixt. comprising a W powder (400-800 mesh) 5, a graphite powder (200-400 mesh) 15, a Ag halide (AgCl, AgBr, or AgI) or metal oxide (ZnO, Sb<sub>2</sub>O<sub>3</sub>, SnO<sub>2</sub>, MgO, Bi<sub>2</sub>O<sub>3</sub>, or CuO) powder (200-400 mesh) 5%, and a **Cu** powder (200-400 mesh) the balance, shaping the mixt. by cold-pressing at 5-10 N/m<sup>2</sup> for 1-10 min, and **sintering** at 800-1000.degree. and under a protective H<sub>2</sub> atm. (0.1-2 N/m<sup>2</sup>) for 1-3 h.

L44 ANSWER 14 OF 21 HCAPLUS COPYRIGHT 2003 ACS

AN 1992:119183 HCAPLUS

DN 116:119183

TI Methods for the preparation of ceramic materials for multilayer capacitors based on barrier layer ceramics based on substituted and/or doped strontium titanate

IN Schwaen, Werner; Seebacher, Baerbel

PA Siemens A.-G., Germany

SO Ger. Offen., 5 pp.

CODEN: GWXXBX

DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 4009956	A1	19911002	DE 1990-4009956	19900328
PRAI	DE 1990-4009956		19900328		

02/13/2003

AB The title methods entail forming grain boundary barrier layers in a 2-step process, the 1st step entailing adding .gtoreq.1 barrier layer-forming materials selected from the silicates, titanates, manganates, aluminates, or niobates of Ba, Sr, Ca, La, Y, Fe, Co, Ni, Mn, **Cu**, and/or Si and/or .gtoreq.2 of the oxides of the above metals to the starting **material mixt.** and **sintering** so as to enrich the grain boundaries with these materials and produce a barrier layer, and then in a 2nd annealing process diffusing Bi oxide, B oxide, and/or Pb oxide into the ceramic.

L44 ANSWER 15 OF 21 HCAPLUS COPYRIGHT 2003 ACS

AN 1990:144257 HCAPLUS

DN 112:144257

TI Binders based on rare earth hydroxide nitrates

AU Vilivetskii, V. G.; Kuz'menkov, M. I.; Usova, O. P.; Matusevich, L. A.

CS Beloruss. Tekhnol. Inst., Minsk, USSR

SO Izvestiya Akademii Nauk SSSR, Neorganicheskie Materialy (1989), 25(10), 1737-9

CODEN: IVNMAW; ISSN: 0002-337X

DT Journal

LA Russian

AB The prepn. and properties of binders for **composite** ceramic **materials** contg. Y, Gd, and Er in the form of hydroxide nitrates were studied. Hydroxides, obtained by reacting NH<sub>4</sub>OH with the starting salts, were reacted with HNO<sub>3</sub> to give materials contg. Y<sub>2</sub>O<sub>3</sub> 48.2 and NO<sub>3</sub> 55.6, Gd<sub>2</sub>O<sub>3</sub> 59.9 and NO<sub>3</sub> 43, or Er<sub>2</sub>O<sub>3</sub> 61.15 and NO<sub>3</sub> 41.6%. The binding strength of the hydroxide-nitrate binders was detd. from the compressive strength of TiO<sub>2</sub>- and CuO-filled pellets pressed at 10 MPa and **sintered** at 1000.degree.. The properties of the ceramic composites were characterized by x-ray diffraction and DTA. The binding strength of the rare earth-based materials was significantly higher than that of similar Al compds.

L44 ANSWER 16 OF 21 HCAPLUS COPYRIGHT 2003 ACS

AN 1989:223880 HCAPLUS

DN 110:223880

TI **Composite** electrically conductive **materials**

IN Shinohara, Koichi; Ushifusa, Nobuyuki; Nagayama, Kosei; Fujii, Mitsuru; Ogiwara, Satoru

PA Hitachi, Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 4 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 01012404	A2	19890117	JP 1987-166807	19870706
PRAI	JP 1987-166807		19870706		

AB A **composite** elec. conductive **material** comprises a glass or glass ceramic compn. essentially contg. **Cu** oxide, Al<sub>2</sub>O<sub>3</sub>, and SiO<sub>2</sub> and an elec. conductor. The material has high thermal and elec. cond., low thermal expansion coeff., and good wettability with metals, and is useful for heat stress buffering materials, radiator fin materials, semiconductor supporting electrodes, etc. A mixt. of a glass powder comprising SiO<sub>2</sub> 55-65, Al<sub>2</sub>O<sub>3</sub> 10-20, and **Cu<sub>2</sub>O** 15-25 wt.% and a **Cu** powder at (15-40)/(85-60)% ratio was **sintered** at 700-1000.degree. in N to give a **sintered** plate having controlled thermal expansion coeff. in (35-120) .times. 10<sup>-7</sup>/.degree.C range and useful as a heat stress buffering material inserted between a SiC substrate and a **Cu** plate.

02/13/2003

L44 ANSWER 17 OF 21 HCAPLUS COPYRIGHT 2003 ACS

AN 1989:198012 HCAPLUS

DN 110:198012

TI **Composite materials** of glass and high-melting oxide  
for building interior and their manufacture

IN Nakagawa, Yoshihiro; Seto, Yoshito; Okabayashi, Akitoshi; Kimura,  
Hiroyuki; Shikata, Takashi

PA Kubota, Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 01028250	A2	19890130'	JP 1987-185799	19870724
	JP 05065452	B4	19930917		
PRAI	JP 1987-185799		19870724		

AB The materials, with glossy surface and high mech. strength, comprise (crystd.) glass contg. SiO<sub>2</sub> 65-80, CaO 5-15, Na<sub>2</sub>O + K<sub>2</sub>O 10-30, and MgO 2-8 wt.%, where high-melting crystal. oxides are dispersed. The materials are manufd. by mixing the glass powder and the oxide powder both contg. .gtoreq.90 wt.% .ltoreq.200 mesh grains, shaping, and **sintering** with optionally crystg. Thus, 85 wt.% glass contg. SiO<sub>2</sub> 72.4, Al<sub>2</sub>O<sub>3</sub> 1.7, CuO 7.1, Na<sub>2</sub>O 13.3, K<sub>2</sub>O 0.9, MgO 4.3, and Fe<sub>2</sub>O<sub>3</sub> 0.1 wt.% and 15 wt.% Al<sub>2</sub>O<sub>3</sub> (.ltoreq.200 mesh) were kneaded with poly(vinyl alc.), shaped at 150 kg/cm<sup>2</sup>, and heated at 850.degree. for 4 h to give a ceramic with crystd. glass showing bending strength 830 kg/cm<sup>2</sup>.

L44 ANSWER 18 OF 21 HCAPLUS COPYRIGHT 2003 ACS

AN 1979:214190 HCAPLUS

DN 90:214190

TI Electrically conductive **composite materials**

IN Douglas, Peter; Pedder, David John

PA Square D Co., USA

SO Brit., 6 pp.

CODEN: BRXXAA

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	GB 1536847	A	19781220	GB 1975-30338	19760712
PRAI	GB 1975-30338		19760712		

AB A method is described of producing a Ag-10.3 wt. % ZnO-0.53 wt. % CuO **composite material** suitable for elec. contacts in medium-to low-duty applications. The material is produced from Ag, Zn, and CuO powders of particle sizes .ltoreq.20, .ltoreq.20, and .ltoreq.2 .mu., resp. After several dry tumbler-mixing and sieving stages the powder mixt. is heated in H<sub>2</sub> 1 h at 500.degree. to produce a Ag-Zn-Cu alloy. The alloy is then sieved and internally oxidized at a rate of 10 g every 7.5 min by heating in air at 600.degree.. After further sieving the **composite material** is compacted at 40 ton/in.<sup>2</sup> in a punch and die set into an elec. contact of the desired shape weighing .apprx.4.5 g and having a Ag layer on one surface. The compact is **sintered** for 1 h in air at 930.degree. and coined at 60 ton/in.<sup>2</sup>. The erosion resistance of the Ag-ZnO-CuO **composite material** is comparable with that of Ag-CdO **composite materials**.



02/13/2003

L44 ANSWER 19 OF 21 HCAPLUS COPYRIGHT 2003 ACS

AN 1978:624999 HCAPLUS

DN 89:224999

TI Silver-metal oxide electric contact material

IN Matsukawa, Tatsuo; Matsukawa, Kiyotaka; Abe, Chitoshi; Mii, Masatoshi

PA Japan Scientific Metallurgical Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 3 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 53092308	A2	19780814	JP 1977-6990	19770125
	JP 59013578	B4	19840330		
PRAI	JP 1977-6990		19770125		

AB A Ag-metal oxide **composite** elec. contact **material**

contg. Fe<sub>3</sub>O<sub>3</sub> 10-20, CuO 2-15 vol. %, and remainder Ag is obtained by a metallurgical process. Thus, a powd. mixt. of Ag 75, Fe<sub>2</sub>O<sub>3</sub> 18, and CuO 7 vol. % was compacted (diam. 2, thickness 8 mm), then **sintered** at 800-900.degree.. The **sinter** was then brazed onto a Cu base.

L44 ANSWER 20 OF 21 HCAPLUS COPYRIGHT 2003 ACS

AN 1977:410221 HCAPLUS

DN 87:10221

TI Siliceous **composite material** for metal conductors for the continuous casting of **copper**

AU Koemets, N. A.; Kuz'min, L. I.; Kudryavtseva, T. N.

CS USSR

SO Tsvetnye Metally (Moscow, Russian Federation) (1977), (3), 26-7

CODEN: TVMTAX; ISSN: 0372-2929

DT Journal

LA Russian

AB Ducts for molten Cu were prepd. by shaping layers of glass fiber cloth coated with powd. fused SiO<sub>2</sub> and Mg phosphate binder, drying, and heating at 500-600.degree.. The duct retained dimensional stability and shape after 6 h use at 1000-1150.degree.. Individual glass fibers retained their outline at 1000.degree.; at 1100-1350.degree. they **sintered** with the binder. Discontinuous traces of fibers remained at .ltoreq.1500.degree. and the composite became vitreous and mineralized with **Cu<sub>2</sub>O** and CuO.

L44 ANSWER 21 OF 21 HCAPLUS COPYRIGHT 2003 ACS

AN 1976:78336 HCAPLUS

DN 84:78336

TI Powder for bonding friction materials to steel substrates

IN Miculek, Jiri; Kubikova, Ruzena

PA Czech.

SO Czech., 2 pp.

CODEN: CZXXA9

DT Patent

LA Czech

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CS 157418	B	19740916	CS 1972-7952	19721123
PRAI	CS 1972-7952		19721123		

AB Bronze [12597-70-5]-graphite [7782-42-5] composite friction parts of automobile clutches and brakes are bonded to the steel substrate with a powd. mixt. of Cu 70-97, Sn 3-25, **Cu<sub>2</sub>O** 0.1-3.0, Si

02/13/2003

0.01-1.0, Na<sub>2</sub>B<sub>4</sub>O<sub>7</sub> 0.1-15.0, and NaBO<sub>2</sub> 0.1-15.0 wt.%. After deposition of powder, the composite is **sintered**. Thus, the powd. mixt. contained Cu [7440-50-8] 83, Sn [7440-31-5] 10, Cu<sub>2</sub>O [1317-39-1] 1.5, Si 0.5, Na<sub>2</sub>B<sub>4</sub>O<sub>7</sub> 3, and NaBO<sub>2</sub> 2%.

FILE 'WPIX, JAPIO'

- L1 8 S EP212659/PN OR DE10002812/PN OR DE2440964/P  
N OR DE2445075/PN OR EP1036849/PN OR EP121161/PN OR  
EP260826/PN  
OR EP302791/PN
- L2 6 S EP308326/PN OR EP406580/PN OR EP545205/PN  
OR EP713930/PN OR US5492653/PN OR US5658499/PN OR AT164892/PN  
OR AU9935955/PN
- L3 7 S BE774365/PN OR CA1255491/PN OR CA1304068/PN  
OR CA1325713/PN OR CA1326349/PN OR CA972344/PN OR  
CN1050011/PN  
OR CN1058741/PN
- L4 8 S CN1059619/PN OR CN1071279/PN OR CN1093565/P  
N OR CN1093846/PN OR CN1134962/PN OR CN1250671/PN OR  
CN1265384/  
PN OR CN1320378/PN
- L5 7 S CS157418/PN OR DE19841574/PN OR DE19841664/  
PN OR DE4009956/PN OR DE4140118/PN OR DE4201940/PN OR  
DK173647/  
PN OR DK8704709/PN
- L6 7 S EP1058247/PN OR EP1085953/PN OR EP1098299/P  
N OR EP1167559/PN OR ES2067287/PN OR ES2115306/PN OR FI9505353/  
PN OR FR2113089/PN
- L7 11 S GB1349400/PN OR GB1536847/PN OR IL79878/PN  
OR IN140966/PN OR JP01012404/PN OR JP01028250/PN OR JP01143104/  
PN OR JP01152007/PN
- L8 11 S JP01172433/PN OR JP02028234/PN OR JP0206011  
0/PN OR "JP03021108 B4"/PN OR "JP03021109 B4"/PN OR "JP03021110  
B4"/PN OR JP03097655/PN
- L9 7 S JP04021739/PN OR "JP04060080 B4"/PN OR  
"JP04069592 B4"/PN OR "JP04077691 B4"/PN OR "JP05065452 B4"/PN  
OR JP05254844/PN
- L10 25 S JP05308193/PN OR JP07003303/PN OR "JP070242  
42 B4"/PN OR JP07026031/PN OR JP07235226/PN OR JP07503097/PN  
OR "JP08025804B4"/PN OR JP08127829/PN S JP09077949/PN OR  
JP09171908/PN OR JP10208923/PN OR JP11006022/PN OR JP11178899/P  
N OR JP11277152/PN OR JP2000239061/PN OR JP2000247735/PN
- L11 16 S JP09077949/PN OR JP09171908/PN OR JP1020892  
3/PN OR JP11006022/PN OR JP11178899/PN OR JP11277152/PN OR  
JP2000239061/PN OR JP2000247735/PN
- L12 24 S JP2000265227/PN OR JP2000311973/PN OR  
JP2000313904/PN OR JP2000313905/PN OR JP2000343820/PN OR  
JP2001189325/PN OR JP2001195722/PN S JP2001196513/PN OR  
JP2001210769/PN OR JP2001313356/PN OR JP2001332129/PN OR  
JP2002038204/PN OR JP2002097070/PN OR JP2002121068/PN
- L13 11 S JP2002212651/PN OR JP2002270745/PN OR

JP2002276665/PN OR JP2002314013/PN OR "JP2833706 B2"/PN OR  
 JP50045023/PN OR JP50048012/PN

L14 9 S JP50058137/PN OR JP50061432/PN OR JP5006143  
 3/PN OR "JP52017532 B4"/PN OR "JP52017533 B4"/PN OR "JP53035767  
 B4"/PN OR JP53092308/PN OR JP54140169/PN OR "JP59013578 B4"

L15 112 S (L1 OR L2 OR L3 OR L4 OR L5 OR L6 OR L7 OR  
 L8 OR L9 OR L10 OR L11 OR L12 OR L13 OR L14)

L16 315001 S CU OR COPPER

L17 2223 S CUPROUS(W) OXIDE OR CU<sub>2</sub>O

L18 71006 S (COMPOSITE OR MIXTURE)(2N) MATERIAL

L19 54334 S THERMAL(W) EXPANSION

L20 31993 S THERMAL(W) CONDUCTIV?

L21 112085 S GOLD OR AU

L22 169633 S SILVER OR AG

L23 529323 S AL OR ALUMINIUM OR ALUMINUM

L24 16502 S TIN(W) OXIDE OR SNO OR SN(W) O OR EPS(W) 6  
 OR NALCO OR SNS 10T OR STANNOXYL OR TIXOLEX

L25 5686 S LEAD(W) OXIDE OR PIGMENT(W) YELLOW OR  
 LEAD(W) MONOXIDE OR LEAD(W) PROTOXIDE OR LEAD(W) OXIDE  
 OR  
 LITHARGE OR LITHARGE(W) YELLOW OR PIGMENT(W) YELLOW  
 OR  
 PLUMBOUS OXIDE OR YELLOW(W) LEAD(W) OCHER

L26 9939 S NICKEL(W) OXIDE OR NIO OR NI(W) O OR  
 MONONICKEL(W) OXIDE OR NICKEL(W) MONOXIDE OR NICKEL  
 MONOXIDE  
 OR NICKEL(W) OXIDE OR NICKEL(W) OXIDE OR NICKELOUS(W)  
 OXIDE

L27 1503 S L16 AND L17

L28 1493 S L27 NOT L15

L29 41 S L28 AND L18

L30 6 S L29 AND L19

L31 4 S L29 AND L20

L32 8 S L29 AND SINTER?

L33 21 S L28 AND L19

L34 17 S L28 AND L20

L35 106 S L28 AND SINTER?

L36 5 S L35 AND COEFFICIENT

L37 45 S (L30 OR L31 OR L32 OR L33 OR L34) OR L36

L38 26 S L29 NOT L37

FILE 'WPIX, JAPIO

L39 10425 S COPPER(W) OXIDE OR CU(W) O

L40 16473 S (L16 OR L22 OR L21 OR L21) AND (L39 OR L26  
 OR L25 OR L24 OR L17)

L41 16371 S L40 NOT (L15 OR (L30 OR L31 OR L32 OR L33  
 OR L34) OR L36 OR L29)

L42	2257 S	L41 AND SINTER?
L43	101 S	L42 AND L18
L44	4 S	L43 AND PLASTIC
L45	1241 S	L18(3N) SINTER?
L46	18 S	L42 AND L45
L47	21 S	L44 OR L46

02/14/2003

L37 ANSWER 1 OF 45 WPIX (C) 2003 THOMSON DERWENT

AN 2002-343280 [38] WPIX

DNN N2002-269953 DNC C2002-098553

TI Multilayered ceramic substrate manufacture, for electronic circuit, involves forming wiring conductor by baking electroconductive **copper** paste of laminate comprising green sheets of specific ceramic material.

DC L03 U14 V04 X12

PA (MURA) MURATA MFG CO LTD

CYC 1

PI JP 2001291959 A 20011019 (200238)\* 13p

ADT JP 2001291959 A JP 2000-104496 20000406

PRAI JP 2000-104496 20000406

AB JP2001291959 A UPAB: 20020618

NOVELTY - A laminate (1) comprising green base material sheets (2), inorganic material layer for shrinkage suppression (3) between green sheets, and electroconductive paste (4), is baked. Shrinkage in main direction of sheet (2) during baking is suppressed by layer (3).

Low-temperature **sintering** ceramic material in sheet (2) is

**sintered**, and **cuprous oxide** in paste is reduced to **copper**, and wiring conductor is formed.

DETAILED DESCRIPTION - The low-temperature **sintering** ceramic material **sinters** at less than 1000 deg. C. The inorganic material for shrinkage suppression does not **sinter** at **sintering** temperature of the ceramic material. An INDEPENDENT CLAIM is also included for electroconductive **copper** containing paste.

USE - For manufacture of a multi-layered ceramic substrate for an electronic circuit.

ADVANTAGE - The multi-layered ceramic substrate without cracks and gaps or via holes with poor conduction, is manufactured. The substrate is small-sized and has high reliability, high-frequency characteristics and wiring density. Amount of residual carbon in the obtained substrate is reduced. Joining strength in the boundary surface of the wiring conductor and ceramic layers of the multi-layered ceramic substrate, is enhanced. Thereby, the electronic circuit can be constructed freely.

DESCRIPTION OF DRAWING(S) - The figure shows the sectional drawing of the laminate.

Laminate 1

Green sheet for base material 2

Inorganic material layer for shrinkage suppression 3

Electroconductive paste object 4

Dwg.1/1

L37 ANSWER 2 OF 45 WPIX (C) 2003 THOMSON DERWENT

AN 2001-367644 [38] WPIX

CR 2001-061618 [05]; 2001-122888 [08]

DNN N2001-268223 DNC C2001-112808

TI Thermal regulating composition, for use as e.g. catalyst system in fuel processor for fuel cell system, has first material and second material capable of sorbing and desorbing heat transfer material.

DC L03 X16

IN DE JONGH, W R; SCHOLTEN, A; STOKMAN, J; VAN NISSELROOY, P F M T

PA (PLUG-N) PLUG POWER LLC

CYC 94

PI WO 2001037990 A1 20010531 (200138)\* EN 33p

RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ  
NL OA PT SD SE SL SZ TR TZ UG ZW

W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM  
DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC

02/14/2003

LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE  
SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW

ADT AU 2001039681 A 20010604 (200153)  
WO 2001037990 A1 WO 2000-US41794 20001102; AU 2001039681 A AU 2001-39681  
20001102

FDT AU 2001039681 A Based on WO 200137990

PRAI US 2000-676841 20000929; NL 1999-1013478 19991103

AB WO 200137990 A UPAB: 20010919

NOVELTY - A thermal regulating composition comprises a first material and a second material capable of sorbing and desorbing a heat transfer material. The second material is present in an amount to sorb an amount of the heat transfer material to remove a portion of the heat generated when the first material undergoes an exothermic reaction. The first and second materials comprise a mixture.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for:

(A) an article comprising a fuel processor for a fuel cell system and the catalyst composite disposed within an interior of a reformer; and

(B) the regulation of the temperature within an exothermic reaction, comprising providing a mixture of the first and second materials, and desorbing from the second material a portion of the heat transfer material to remove a portion of the heat generated when the catalyst material undergoes an exothermic reaction.

USE - Used as e.g. a catalyst system in a fuel processor for a fuel cell system.

ADVANTAGE - Provides a catalyst material that is easier and safer to handle, and can be oxidized (as for shipping) or activated more easily, safely and conveniently than the conventional catalyst systems. The temperature quenching capability of the inventive composition allows improved temperature control of the composition during reaction. It has improved controllability through heat exchange methods and reactant control e.g. cutting off or reducing reactants).

Dwg.0/6

L37 ANSWER 3 OF 45 WPIX (C) 2003 THOMSON DERWENT

AN 2001-308452 [32] WPIX

DNN N2001-220757 DNC C2001-095289

TI Abatement of effluent from a process of depositing copper on a substrate from organometallic source reagent by contacting the effluent with a sorbent material having sorptive affinity for the source reagent and decomposition product.

DC E12 L03 M13 U11

IN ARNO, J; DUBOIS, R; FALLER, R; HOLST, M; TOM, G

PA (ADTE-N) ADVANCED TECHNOLOGY MATERIALS

CYC 83

PI WO 2001028917 A1 20010426 (200132)\* EN 36p

RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ  
NL OA PT SD SE SL SZ TZ UG ZW

W: AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GE  
GH HU IL IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW  
MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG UZ VN YU  
ZW

AU 2001013353 A 20010430 (200148)

US 6391385 B1 20020521 (200239)

US 2002094380 A1 20020718 (200254)

EP 1237815 A1 20020911 (200267) EN

R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT  
RO SE SI

KR 2002042723 A 20020605 (200277)

ADT WO 2001028917 A1 WO 2000-US28846 20001018; AU 2001013353 A AU 2001-13353  
20001018; US 6391385 B1 US 1999-420108 19991018; US 2002094380 A1 Div ex  
US 1999-420108 19991018, US 2001-828422 20010406; EP 1237815 A1 EP

02/14/2003

2000-975279 20001018, WO 2000-US28846 20001018; KR 2002042723 A KR  
2002-704952 20020418

FDT AU 2001013353 A Based on WO 200128917; US 2002094380 A1 Div ex US 6391385;  
EP 1237815 A1 Based on WO 200128917

PRAI US 1999-420108 19991018; US 2001-828422 20010406

AB WO 200128917 A UPAB: 20010611

NOVELTY - Abatement of effluent from a process (preferably chemical vapor deposition (CVD)) for depositing **copper** on a substrate from an organometallic source reagent involves contacting the effluent with a sorbent material having sorptive affinity for the source reagent and decomposition products, to partially remove residual source reagent and the decomposition products from the effluent.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is included for an apparatus for the abatement of effluent from the CVD process comprising a sorbent bed containing the sorbent material and a flow path joining the sorbent bed in gas flow communication with the process, so that effluent is flowed through the gas flow path to the sorbent bed for effluent abatement.

USE - For abatement of effluent from chemical vapor deposition process using organometallic source reagent (claimed).

ADVANTAGE - The process regenerates the spent sorbent material. The sorbent material absorbs the trimethyl vinyl silane (TMVS), which is highly flammable, **Cu**(1,1,1,5,5,5-hexafluoroacetylacetonato)(hfac) TMVS and **Cu**(hfac)<sub>2</sub> thus preventing the excessive emission of **copper** in the discharge vent gas.

Dwg.0/1

L37 ANSWER 4 OF 45 WPIX (C) 2003 THOMSON DERWENT

AN 2001-276129 [29] WPIX

DNN N2001-197449

TI High frequency semiconductor device has base substrate with specific Vickers hardness, **thermal expansion** coefficient and heat conductivity.

DC U11 U14

PA (HITA) HITACHI LTD

CYC 1

PI JP 2001035948 A 20010209 (200129)\* 4p

ADT JP 2001035948 A JP 1999-208670 19990723

PRAI JP 1999-208670 19990723

AB JP2001035948 A UPAB: 20010528

NOVELTY - A high frequency semiconductor chip (101) is mounted on a base substrate (102) having Vickers hardness of 300 or less. The substrate has **thermal expansion** coefficient of 15 multiply 10<sup>6</sup>/ deg. C and heat conductivity of 130 W/mK or more. The substrate has mixture of **Cu**, **Cu<sub>2</sub>O**, Al<sub>2</sub>O<sub>3</sub> and SiO<sub>2</sub>.

USE - High frequency semiconductor device.

ADVANTAGE - Since degree of freedom of design of package structure is improved, number of components is reduced and high throughput is offered.

DESCRIPTION OF DRAWING(S) - The figure shows the sectional view of HF semiconductor device.

HF semiconductor chip 101

Substrate 102

Dwg.1/3

L37 ANSWER 5 OF 45 WPIX (C) 2003 THOMSON DERWENT

AN 2000-441618 [38] WPIX

DNN N2000-329567 DNC C2000-134056

TI Telecommunication device has a fusion seal, which is a **copper** aluminosilicate glass having low coefficient **thermal expansion** and maintains the substrate and optical fiber in intimate contact.



02/14/2003

DC L01 V07  
IN YOUNG, D M  
PA (CORG) CORNING INC  
CYC 83  
PI WO 2000027768 A1 20000518 (200038)\* EN 16p  
RW: AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE  
W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB  
GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU  
LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR  
TT UA UG UZ VN YU ZA ZW  
AU 2000012259 A 20000529 (200041)  
EP 1144325 A1 20011017 (200169) EN  
R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT  
RO SE SI  
CN 1325367 A 20011205 (200223)  
JP 2002529780 W 20020910 (200274) 15p  
ADT WO 2000027768 A1 WO 1999-US24884 19991021; AU 2000012259 A AU 2000-12259  
19991021; EP 1144325 A1 EP 1999-971786 19991021, WO 1999-US24884 19991021;  
CN 1325367 A CN 1999-813013 19991021; JP 2002529780 W WO 1999-US24884  
19991021, JP 2000-580952 19991021  
FDT AU 2000012259 A Based on WO 200027768; EP 1144325 A1 Based on WO  
200027768; JP 2002529780 W Based on WO 200027768  
PRAI US 1998-107379P 19981106  
AB WO 200027768 A UPAB: 20000811  
NOVELTY - A telecommunication device (10) comprises a substrate (12)  
having a low positive, or negative, **thermal expansion**  
coefficient; a low expansion optical fiber (14); and fusion seal that  
maintains the substrate and optical fiber in intimate contact. The fusion  
seal is **copper** aluminosilicate glass (16) having a coefficient  
of **thermal expansion** of less than 20 multiply 10<sup>-7</sup>/  
deg. C (25-500 deg. C).  
DETAILED DESCRIPTION - The glass comprises (wt.% on an oxide basis)  
silicon dioxide (SiO<sub>2</sub>) (33-70), aluminum oxide (10-35), **copper**  
oxide (**Cu<sub>2</sub>O**), boron oxide (0-10), SiO<sub>2</sub> plus or minus B<sub>2</sub>O<sub>3</sub>  
(33-70), Al<sub>2</sub>O<sub>3</sub> plus or minus B<sub>2</sub>O<sub>3</sub> (10-35), and pentoxide (0-10). The  
**Cu<sub>2</sub>O** is completely in the cuprous state.  
An INDEPENDENT CLAIM is also included for a method of producing a  
**copper** aluminosilicate glass with the **copper** present in  
the cuprous state comprising mixing a glass batch containing  
**cuprous oxide** as the source of **copper**, melting  
the batch, and maintaining the melt in a mildly oxidized condition to  
avoid formation of **copper** particles.  
USE - For telecommunications.  
ADVANTAGE - The material has a low softening point and low  
coefficient of **thermal expansion** and avoids the  
formation of **copper** particles.  
DESCRIPTION OF DRAWING(S) - The figure shows a schematic view of a  
telecommunication device  
telecommunication device 10  
substrate 12  
optical fiber 14  
**copper** aluminosilicate glass 16  
Dwg.1/3  
L37 ANSWER 6 OF 45 WPIX (C) 2003 THOMSON DERWENT  
AN 2000-431527 [37] WPIX  
DNN N2000-322038 DNC C2000-131195  
TI Production of tungsten-**copper** composite powder to produce  
**sintered** products uses a reduction process consisting of a  
**copper** precursor in the presence of tungsten metal suspended in an  
organic liquid phase.

02/14/2003

DC L03 M22 M26 P53  
IN BIANCO, A; GUSMANO, G; POLINI, R  
PA (CELS-N) CELSIA SPA  
CYC 89  
PI WO 2000035616 A1 20000622 (200037)\* EN 21p  
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL  
OA PT SD SE SL SZ TZ UG ZW  
W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK DM EE ES FI  
GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT  
LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM  
TR TT TZ UA UG US UZ VN YU ZA ZW  
AU 2000010738 A 20000703 (200046)  
EP 1140397 A1 20011010 (200167) EN  
R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT  
RO SE SI  
IT 1302926 B 20001010 (200216)  
CZ 2001002180 A3 20020313 (200226)  
EP 1140397 B1 20030102 (200310) EN  
R: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE  
ADT WO 2000035616 A1 WO 1999-IT321 19991012; AU 2000010738 A AU 2000-10738  
19991012; EP 1140397 A1 EP 1999-954333 19991012, WO 1999-IT321 19991012;  
IT 1302926 B IT 1998-RM776 19981216; CZ 2001002180 A3 WO 1999-IT321  
19991012, CZ 2001-2180 19991012; EP 1140397 B1 EP 1999-954333 19991012, WO  
1999-IT321 19991012  
FDT AU 2000010738 A Based on WO 200035616; EP 1140397 A1 Based on WO  
200035616; CZ 2001002180 A3 Based on WO 200035616; EP 1140397 B1 Based on  
WO 200035616  
PRAI IT 1998-RM776 19981216  
AB WO 200035616 A UPAB: 20000807  
NOVELTY - A composite powder consisting of finely interspersed tungsten  
and **copper** is produced by reducing a **copper** precursor  
compound in the presence of tungsten metal suspended in an organic liquid  
phase produced by one or a mixture of polyols.  
DETAILED DESCRIPTION - Production of a tungsten-**copper**  
composite powder suitable to be pressed and **sintered** and having  
a **copper** metal content of 5-35 wt.% comprises:  
(a) suspending a tungsten metal powder in one of a mixture of liquid  
polyols,  
(b) adding to this, a suspension of a **copper** precursor and  
minor amounts of metal precursor,  
(c) heating the resulting suspension to at least 60 deg. C with  
stirring to allow reduction of **copper** and the metal precursor,  
and  
(d) separating the obtained solid phase and washing it using an  
organic solvent.  
USE - The method is used for producing a tungsten-**copper**  
composite powder suitable for the production of **sintered**  
products. Tungsten-**copper** based **composite**  
**materials** are used for the production of heat exchangers suitable  
for electrical devices and for the production of electrodes and power  
electrical contacts.  
ADVANTAGE - The starting tungsten metal allows the **copper**  
reduction at lower temperatures and times by undergoing a partial solution  
as tungstenate before diminishing in the final metal product. The process  
produces tungsten-**copper** composite powders without the need of a  
conventional and more expensive infiltration method while carries out both  
**copper** reduction and tungsten and **copper** interspersion  
in an inorganic liquid phase where tungsten powder is present, thus,  
avoiding any preliminary process for the powder mixing and/or grinding.  
Dwg.0/0

02/14/2003

L37 ANSWER 7 OF 45 WPIX (C) 2003 THOMSON DERWENT  
AN 1998-160096 [15] WPIX  
DNN N1998-127263 DNC C1998-051697  
TI **Copper** indium selenide or sulphide strip solar cell production -  
using narrow gap reactor for exposing indium-coated **copper** strip  
to sulphur or selenium vapour.  
DC L03 M11 U12  
IN PENNDORF, J  
PA (SOLA-N) INST SOLARTECHNOLOGIEN; (SOLA-N) INST SOLAR TECHNOLOGIEN;  
(ISTS-N) IST-INST SOLARTECHNOLOGIEN GMBH  
CYC 24  
PI DE 19634580 A1 19980305 (199815)\* 5p  
WO 9809337 A1 19980305 (199816) DE 16p  
RW: AT BE CH DE DK ES FI FR GB GR IE IT LU MC NL PT SE  
W: AU CA CN JP KR RU US  
DE 19634580 C2 19980702 (199830)  
AU 9743751 A 19980319 (199831)  
EP 922303 A1 19990616 (199928) DE  
R: AT DE ES FR GB GR IE IT NL PT SE  
EP 922303 B1 20000223 (200015) DE  
R: AT DE ES FR GB GR IE IT NL PT SE  
DE 59701155 G 20000330 (200023)  
JP 2000503808 W 20000328 (200026) 23p  
ES 2143323 T3 20000501 (200028)  
US 6117703 A 20000912 (200046)  
ADT DE 19634580 A1 DE 1996-19634580 19960827; WO 9809337 A1 WO 1997-DE1832  
19970821; DE 19634580 C2 DE 1996-19634580 19960827; AU 9743751 A AU  
1997-43751 19970821; EP 922303 A1 EP 1997-941816 19970821, WO 1997-DE1832  
19970821; EP 922303 B1 EP 1997-941816 19970821, WO 1997-DE1832 19970821;  
DE 59701155 G DE 1997-501155 19970821, EP 1997-941816 19970821, WO  
1997-DE1832 19970821; JP 2000503808 W WO 1997-DE1832 19970821, JP  
1998-511163 19970821; ES 2143323 T3 EP 1997-941816 19970821; US 6117703 A  
WO 1997-DE1832 19970821, US 1999-254098 19990301  
FDT AU 9743751 A Based on WO 9809337; EP 922303 A1 Based on WO 9809337; EP  
922303 B1 Based on WO 9809337; DE 59701155 G Based on EP 922303, Based on  
WO 9809337; JP 2000503808 W Based on WO 9809337; ES 2143323 T3 Based on EP  
922303; US 6117703 A Based on WO 9809337  
PRAI DE 1996-19634580 19960827  
AB DE 19634580 A UPAB: 19980410

A process for producing CIS (**copper** indium selenide or sulphide) strip solar cells involves (a) electroplating one side of a pre-cleaned **copper** strip with indium during continuous coil to coil passage; (b) subjecting the plated strip to continuous rapid heating by contact with a heated graphite body and to one-side contact with hot sulphur or selenium vapour in a narrow gap; (c) selectively etching away the resulting **copper** sulphide layer; and (d) coating the CIS layer surface with a transparent collector or adaptation layer of p+-conductive **copper** oxide sulphide. Ga or an In-Ga alloy can be used instead of In, Se or an S/Se mixture can be used instead of S and other p+-conductive transparent compounds (e.g. ZnTe and **Cu2O**) can be used instead of **copper** oxide sulphide.

Also claimed is a narrow gap reactor for carrying out the above process, in which a reaction gap is enclosed by a radiant heated stationary graphite heater (1) with a convex gap surface, a gas heater (2) (option ally of graphite) with a concave gap surface and two quartz glass plates (3) for sealing the gap (4).

ADVANTAGE - The process allows highly efficient and economical deposition of adherent CIS solar cells on **copper** strips. The reactor ensures rapid and continuous strip heating utilising the good sliding properties and **thermal conductivity** of graphite so that rotating heated parts are not required; provides high

02/14/2003

material utilisation efficiency by using a precisely defined narrow reaction space; ensures high reactivity of Se and S by gas and strip heating; and has a simple and inexpensive construction.  
Dwg.3/4

L37 ANSWER 8 OF 45 WPIX (C) 2003 THOMSON DERWENT

AN 1996-454483 [45] WPIX

DNC C1996-142374

TI Formation of synthetic corrosion products on tubing surfaces - comprises exerting pressure on metal oxide sludge slurry deposited between two tubes having different coefficients of expansion.

DC J08 M14

IN LANE, M H; SALAMON, E J M

PA (USAT) US DEPT ENERGY

CYC 1

PI US 5560883 A 19961001 (199645)\* 6p

ADT US 5560883 A US 1995-473461 19950607

PRAI US 1995-473461 19950607

AB US 5560883 A UPAB: 19961111

Method for forming a layer of synthetic corrosion prods. on tubing surfaces comprises: (a) selecting an object tube and a sacrificial tube, where the two tubes have coeffts. of **thermal expansion** that are not equal; (b) placing the two tubes circumjacent, one inside the other, thereby creating an annular region between the two tubes; (c) filling the annular region with a sludge slurry; and (d) expanding the inside tube through heating, thereby exerting pressure on the sludge slurry causing a layer of synthetic corrosion prod. from the sludge slurry to adhere to the object tube.

The sludge slurry is pref. a synthetic metal oxide selected from Fe<sub>2</sub>O<sub>3</sub>, Fe<sub>3</sub>O<sub>4</sub>, CuO, **Cu<sub>2</sub>O**, NiO, MgO, ZnO, PbO, SnO<sub>2</sub>, TiO<sub>2</sub>, SiO<sub>2</sub>, MnO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, Cr<sub>2</sub>O<sub>3</sub> and nickel ferrite. The sacrificial tube is selected from alloys of **Cu**, Ni, Mo, Zr, Ti and Fe.

The method further comprises the step of removing the sacrificial tube after the synthetic corrosion prod. has been deposited, where the sacrificial tube is removed by chemical etching or mechanical removal.

The object tube may enclose or be enclosed by the sacrificial tube, where the sacrificial tube has a **thermal expansion** coefft. of less than 40% or greater than 40%, respectively, than that of the object tube.

USE - The present invention relates to a method for depositing a layer of sludge of uniform or variable profile onto a tubes inner or outer curved surface, or other object.

ADVANTAGE - Corrosion products can be reproduced and tested under controlled conditions, in order to improve and refine heat exchanger operation.

Dwg.1/4

L37 ANSWER 9 OF 45 WPIX (C) 2003 THOMSON DERWENT

AN 1996-269808 [28] WPIX

DNN N1996-226759 DNC C1996-085775

TI Iron - and **copper** -based powders suitable for plasma spraying - used to produce antifriction coatings providing very low dry friction coefft. and a porous surface for lubricant retention.

DC M13 M22 P53

IN FUCINARI, C A; RAO, V D N; ROSE, R A; YEAGER, D A; RAO, V D

PA (FORD) FORD MOTOR CO CANADA; (FORD) FORD MOTOR CO LTD; (FORD) FORD WERKE AG; (FORD) FORD GLOBAL TECHNOLOGIES INC; (FORD-N) FORD GLOBAL TECHNOLOGIES INC; (FORD) FORD GLOBAL TECHNOLOGIES INC

CYC 6

PI EP 715916 A2 19960612 (199628)\* EN 7p

R: DE ES GB

02/14/2003

CA 2164139 A 19960610 (199640)  
EP 715916 A3 19960904 (199643)  
US 5663124 A 19970902 (199741) 6p  
US 5846349 A 19981208 (199905)  
US 5863870 A 19990126 (199911)  
EP 715916 B1 20000315 (200018) EN

R: DE ES GB

DE 69515603 E 20000420 (200026)  
ES 2143596 T3 20000516 (200031)  
MX 195649 B 20000324 (200123)

ADT EP 715916 A2 EP 1995-307340 19951016; CA 2164139 A CA 1995-2164139  
19951130; EP 715916 A3 EP 1995-307340 19951016; US 5663124 A US  
1994-352666 19941209; US 5846349 A Div ex US 1994-352666 19941209, US  
1997-798207 19970210; US 5863870 A Div ex US 1994-352666 19941209, US  
1997-799738 19970818; EP 715916 B1 EP 1995-307340 19951016; DE 69515603 E  
DE 1995-615603 19951016, EP 1995-307340 19951016; ES 2143596 T3 EP  
1995-307340 19951016; MX 195649 B MX 1995-5023 19951130  
FDT US 5846349 A Div ex US 5663124; US 5863870 A Div ex US 5663124; DE  
69515603 E Based on EP 715916; ES 2143596 T3 Based on EP 715916  
PRAI US 1994-352666 19941209; US 1997-798207 19970210; US 1997-799738  
19970818

AB EP 715916 A UPAB: 19990609

A powder composition for thermal spraying is based on water-atomised Fe or  
**Cu** based particles in which 90% of the metal is combined with  
oxygen in the lowest atomic oxygen form (i.e. FeO or **Cu2O**).

Also claimed are suitable **Cu** and Fe based powder  
compositions.

Also claimed is a method of making antifriction Fe-based powder for  
plasma deposition where the particles are annealed after formation to  
reduce their carbon content.

Also claimed is an Fe-based plasma sprayed coating for an Al-based  
substrate, said coating having a dry coefft. of friction less than 0.25,  
thermal stability up to 1400 deg. F, and adhesion to the substrate of 6000  
psi minimum.

The low alloy steel powder is characterised by: a coefficient of  
friction less than 0.25; a hardness of 12-60 Rc; a **thermal**  
**conductivity** at least 1/3 of Al; a flowability of at least 100  
g/min. through an orifice of 5 mm dia. by 100 mm long; the particles are  
20-60 mu m and are either spherical, hemispherical or of free flowing  
granular configuration.

The antifriction coating uses a powder of at least 90% FeO produced  
by directing steam into the molten metal stream such that the particles  
are 10-250 mu m and are either spherical, hemispherical or irregular  
granular in shape.

The coating for Al has a compressive strength of around 10,000 psi.

USE - This invention produces **Cu** and Fe based powders  
suitable for plasma spraying which function as heat transferring solid  
lubricants. Particularly applicable to antifriction coatings in automotive  
components.

ADVANTAGE - Prior art antifriction coatings generally are very  
expensive and have limited success. This invention uses a low-cost  
iron-based powder which can easily be applied by plasma spraying and is  
highly economical compared to the prior art. The coating is found to  
produce a very low coefft. of friction (less than 0.25), conducts heat  
readily and has a microporous surface which readily retains fluids, i.e.  
lubricants.

Dwg.1/5

L37 ANSWER 10 OF 45 WPIX (C) 2003 THOMSON DERWENT  
AN 1994-082280 [10] WPIX  
DNN N1994-064383 DNC C1994-037653

02/14/2003

TI **Copper** -molybdenum composite strip used in semiconductor packaging etc. - has molybdenum particles embedded in a **copper** matrix and has improved through-thickness **thermal conductivity**.

DC L03 M22 P53 U11 X12

IN SCOREY, C

PA (AMET) AMETEK SPECIALTY METAL PROD DIV

CYC 1

PI US 5292478 A 19940308 (199410)\* 8p

ADT US 5292478 A US 1991-719412 19910624

PRAI US 1991-719412 19910624

AB US 5292478 A UPAB: 19940421

A process for forming a **composite** strip **material** having a matrix component and a low conductivity phase material component. A blend contg. low expansion phase material (LEP) and matrix oxide (MO) is heated in a reducing atmos. to form a coating of MO on LEP. A blend of the coated particles with matrix component is roll compacted to form a **composite** strip **material**. The LEP has an aspect ratio in the range 1:1 to 4:1 so as to create a thermal path length through the matrix from a first side to a second side of the composite strip.

Also claimed is a process as above where the coated particles are not blended with matrix component before roll compacting.

The first blending step involves Mo powder sized 20-200 microns with **cuprous oxide** powder sized 1-10 microns. The ratio of Mo to **cuprous oxide** is 0.8:1-19:1. In the case where the coated particles are not blended with matrix material the materials used are 80-95 wt.% Mo and 5-20 wt.% **cuprous oxide**.

USE/ADVANTAGE - The **composite material** has utility in electrical and electronic applns. such as semiconductor packaging. The **composite material** has improved through-thickness **thermal conductivity** properties. The **thermal expansion** coefficients of the composite match those of dielectric substrates used in semiconductor packaging.  
Dwg.0/3

L37 ANSWER 11 OF 45 WPIX (C) 2003 THOMSON DERWENT

AN 1993-212860 [26] WPIX

DNN N1993-163684 DNC C1993-094438

TI Charge for prodn. of **sintered composite material** - contains graphite, aq. **copper** oxide paste, nickel oxide, ethylene glycol, detergent and iron.

DC M22 M27 P53

IN BAGIROV, D A; DOROFEEV, YU G; MAMEDOV, A T

PA (BAKK-R) BAKKONDITSIONER RES PRODN ASSOC

CYC 1

PI SU 1747243 A1 19920715 (199326)\* 3p

ADT SU 1747243 A1 SU 1990-4815853 19900418

PRAI SU 1990-4815853 19900418

AB SU 1747243 A UPAB: 19931116

The charge contains (in wt.%): graphite 0.8-1.0, an aq. paste of **cuprous oxide** 0.9-3.6, nickel oxide 0.005-0.02, ethylene glycol 0.1-0.4, commercial detergent paste 0.0015-0.005 and balance iron. The aq. paste of **cuprous oxide** replaces technological lubricant, e.g., zinc stearate, and acts as a **copper**-alloying agent. Nickel oxide has similar effect and strengthens the material in the **sintering** process, while ethylene glycol and commercial detergent paste improve pressability of charge components and prevent their segregation. The content of graphite has to be kept below 1.0 wt.%, since higher content of graphite leads to formation of cementite whose presence in the structure causes brittleness of obtd. **composite material**.

02/14/2003

The **composite material** is produced by mixing the components of charge in Y-shaped mixer for 1.5 hrs., and pressing using a hydraulic press. at 1000 MPa. Obtd. prismatic blanks are **sintered** in a continuous action furnace, in endothermal gas atmos., at 1150 deg.C.

Tests show that use of the proposed charge reduces force needed to remove formed blanks from matrix to 31.3-39.4 kN, compared to 180 kN when the known charge is used.

USE/ADVANTAGE - In powder metallurgy, as a charge for prodn. of **sintered composite material** used in the mfr. of constructional articles. The charge has improved technological parameters. Bul.26/15.7.92  
Dwg.0/0

L37 ANSWER 12 OF 45 WPIX (C) 2003 THOMSON DERWENT

AN 1991-214010 [29] WPIX

DNC C1991-093133

TI Lead-alumino-borosilicate glass compsn. - contains oxide(s) of silicon, boron, aluminium, lead, zinc, manganese, antimony, vanadium and **copper**.

DC L01 L03

IN FORMAGO, I A; MIRONOVICH, N M; NEMKOVICH, I K

PA (BEPO) BELORUSSIAN POLY

CYC 1

PI SU 1604762 A 19901107 (199129)\*

ADT SU 1604762 A SU 1988-4618533 19881213

PRAI SU 1988-4618533 19881213

AB SU 1604762 A UPAB: 19930928

The glass compsn. contains (in wt.%): SiO<sub>2</sub> 1.0-2.0, B<sub>2</sub>O<sub>3</sub> 10.0-15.0, Al<sub>2</sub>O<sub>3</sub> 3.0-5.0, PbO 77.0-83.0, ZnO 0.5-2.0, MnO 0.2-0.6, Sb<sub>2</sub>O<sub>5</sub> 1.0-2.0, V<sub>2</sub>P<sub>5</sub> 1.0-3.0 and **Cu<sub>2</sub>O** 0.3-0.5. The glass. is synthesised in gas and electric furnaces at 950 + 50 deg.C.

The glass has flowability temp. 400 +/- 10 deg.C, coefft. of **thermal expansion** 83.5-89.2 x 10 power 7 /deg.C and water resistance 0.72-1.2%.

USE/ADVANTAGE - Proposed glass can be used in microelectronics as a low temp. coating and soldering material. It has lowered flowability temp., reduced cost and good adhesion to silicon, steatite and high alumina ceramics. Bul.41/7.11.90  
0/0

L37 ANSWER 13 OF 45 WPIX (C) 2003 THOMSON DERWENT

AN 1990-177328 [23] WPIX

DNN N1990-137837 DNC C1990-077024

TI Glass for low m.pt. **composite material** - contains oxide(s) of silicon, boron, aluminium, lead, magnesium, calcium, antimony, indium, zinc, **copper** and cadmium.

DC L01 L03 U11

IN NEMKOVICH, I K

PA (BEPO) BELORUSSIAN POLY

CYC 1

PI SU 1502496 A 19890823 (199023)\*

ADT SU 1502496 A SU 1987-4350063 19871225

PRAI SU 1987-4350063 19871225

AB SU 1502496 A UPAB: 19930928

The glass contains (in wt.%): SiO<sub>2</sub> 2.0-3.0, B<sub>2</sub>O<sub>3</sub> 21.0-25.0, Al<sub>2</sub>O<sub>3</sub> 1.5-2.5, PbO 62.0-68.0, MgO 0.3-0.5, CaO 0.3-0.5, Sb<sub>2</sub>O<sub>5</sub> 2.0-4.0, In<sub>2</sub>O<sub>3</sub> 1.0-3.0, ZnO 1.0-2.0, **Cu<sub>2</sub>O** 0.3-0.5 and CdO 1.0-2.0.

The glass is synthesised in gaseous or electric furnace, in quartz or corundum crucible, at 1050 +/-50 deg. C. Obtd. glass can be used in prodn. of low temp. **composite material**, used in microelectronics as low-melting glass-solder and protective coating, also

02/14/2003

for microcircuits support, with low coefft. of thermal linear expansion. The **composite material** is made of (wt.%): glass 92.0-95.0, quartz glass 5.0-8.0. The flowability temp. of glass is 450 +/-10 deg. C, coefft. of thermal linear expansion 770 +/-1.0 x 10 power minus 7/deg., water resistance 0.68-1.51%.

USE - Proposed alumoborosilicate glass can be used in prodn. of **composite material** employed in microelectronics, esp. for IC substrate with low **thermal expansion** coefft.  
Bul.3/23.8.89  
0/0

L37 ANSWER 14 OF 45 WPIX (C) 2003 THOMSON DERWENT

AN 1989-097310 [13] WPIX

DNN N1989-073954 DNC C1989-043166

TI Mfg. oxide superconductor **materials** - comprising **composite** oxide of scandium, yttrium, lanthanum, ytterbium, calcium, strontium, barium and **copper**.

DC L03 U14 X12

PA (DOWA) DOWA MINING CO LTD

CYC 1

PI JP 01045768 A 19890220 (198913)\* 5p

ADT JP 01045768 A JP 1987-202877 19870814

PRAI JP 1987-202877 19870814

AB JP 01045768 A UPAB: 19930923

The material is expressed by  $X(\text{Sc}_{x1}\text{Y}_{x2}\text{La}_{x3}\text{Yb}_{x4})\cdot\text{Y}(\text{Ca}_{y1}\text{Sr}_{y2}\text{Ba}_{y3})\cdot\text{Z}(\text{Cu})\cdot\text{W}(\text{O})$ , where,  $x1+x2+x3+x4 = 1$  with  $X = 1 \pm 0.2$ ;  $y1+y2+y3 = 1$  with  $Y = 1 \pm 0.2$ ; and  $Z = 1 \pm 0.2$ ; and  $3W/(X+Y+Z) = 2.75-2.25$ .

A powder mixt. comprising 1 mol of **Cu2O**; 1 mol in total of  $\text{Sc}_2\text{O}_3$ ,  $\text{Y}_2\text{O}_3$ ,  $\text{La}_2\text{O}_3$ , and  $\text{Yb}_2\text{O}_3$ ; and 2 mol in total of  $\text{CaO}$ ,  $\text{SrO}$ , and  $\text{BaO}$ , is **sintered** or molten to give a stoichiometric oxide, which is crushed, moulded under pressure, and heated under a reducing atmos.

ADVANTAGE - Provides SCs having high  $T_c$  of above the liq.  $\text{N}_2$  temps.

0/2

L37 ANSWER 15 OF 45 WPIX (C) 2003 THOMSON DERWENT

AN 1986-269496 [41] WPIX

DNC C1986-116847

TI Forming **copper** electrodes on aluminium nitride - where plated film is heat-treated in weakly acidic environment to form complex oxide at metal-ceramic interface.

DC L02 L03 M13 P42

PA (DENK) TDK CORP

CYC 3

PI JP 61197488 A 19860901 (198641)\* 4p

US 4737416 A 19880412 (198817)

JP 06079989 B2 19941012 (199439) 3p

ADT JP 61197488 A JP 1985-37133 19850226; US 4737416 A US 1986-831455 19860220; JP 06079989 B2 JP 1985-37133 19850226

FDT JP 06079989 B2 Based on JP 61197488

PRAI JP 1985-37133 19850226

AB JP 61197488 A UPAB: 19930922

An aluminium nitride sintered body is coated with a **copper** film by wet or gas-phase plating followed by thermal treatment at 900-1083 deg.C effected in a weakly acidic environment.

USE/ADVANTAGE - High adhesion strength between **Cu** and aluminium nitride, good electroconductivity and wide range of applicability are provided by the use of cheap material, **copper**, with high productivity.

In an example an AlN sintered body was degreased with a 10% aq. soln. of NaOH and etched with a mixed acid (HF 10%,  $\text{HNO}_3$  20%) and then sensitised with  $\text{SnCl}_2$  followed by activation with  $\text{PdCl}_2$  prior to



02/14/2003

**copper** plating with a soln. contg. CuSO<sub>4</sub>, EDTA, formalin, NaOH and a stabiliser. By electroplating a 7 micron thick **Cu** film was formed. The thermal treatment was carried out at 900 and 1000 deg.C for 1-5 hrs. under PO<sub>2</sub>/ppm in N<sub>2</sub> of 6-7.  
0/0

L37 ANSWER 16 OF 45 WPIX (C) 2003 THOMSON DERWENT  
AN 1985-252034 [41] WPIX  
DNC C1985-109110  
TI Car radiator or heater **copper** alloy - contains yttrium and has good corrosion resistance etc..  
DC M26  
PA (FURU) FURUKAWA ELECTRIC CO LTD; (FURU) FURUKAWA ELECTRIC CO  
CYC 1  
PI JP 60165335 A 19850828 (198541)\* 2p  
JP 05025931 B 19930414 (199318) 3p  
ADT JP 60165335 A JP 1984-21215 19840208; JP 05025931 B JP 1984-21215 19840208  
FDT JP 05025931 B Based on JP 60165335  
PRAI JP 1984-21215 19840208  
AB JP 60165335 A UPAB: 19930925  
The **Cu**-alloy comprises by wt. 0.07-1.0% Y, and the bal.  
**Cu**.

USE/ADVANTAGE - The **Cu**-alloy is used for fins of radiators and heaters for automobiles. The alloy has excellent corrosion resistance in corrosive environment where Cl<sub>2</sub> and S coexist. The life of regenerators is extended and it is possible to decrease the wt. The alloy has sufficient **thermal conductivity** and workability for rolling. The Y is effective in improving corrosion by preventing the formation of lamellar films of **Cu<sub>2</sub>O**, without harming intrinsic **thermal conductivity** of **Cu**.

In an example, the **Cu**-alloy contg. 0.08 wt.%Y, 0.0005 wt.%O, was melted in graphite crucible covered with charcoal powder, to which Y was added, cast to 25tx250Wx250L mm ingot, following by grinding 2.5 mm from the surface, hot rolling, repeated annealing and cold rolling to 0.5 mm thick sheet (final draft:40%). It had wt. loss of 1.56 mg/cm<sup>2</sup> in cycle test:exposure-air mixed with 0.3%SO<sub>2</sub>, 0.3%Cl<sub>2</sub>-48hr; exposure-60 deg.C, 80% RH-96hr; run 4 cycles, electrical conductivity of 98 (% IACS), and no breakage in every 100 mm of sheet, after rolling the annealed sheet from 0.1 mm thick to 0.2 mm thick sheet.  
0/0

L37 ANSWER 17 OF 45 WPIX (C) 2003 THOMSON DERWENT  
AN 1985-218446 [36] WPIX  
DNN N1985-164126 DNC C1985-095135  
TI High **thermal conductivity** substrate for electronic devices - comprising aluminium nitride and yttrium, rare earth metal or alkaline earth metal.  
DC L03 U11  
IN ANZAI, K; IWASE, N; KASORI, M; RIYOGI, K; SAITO, K; SATO, N; SHINOZAKI, K; TSUGE, A  
PA (TOKE) TOSHIBA KK  
CYC 5  
PI EP 153737 A 19850904 (198536)\* EN 24p  
R: DE FR GB  
JP 60178687 A 19850912 (198543)  
JP 60178688 A 19850912 (198543)  
JP 61084089 A 19860428 (198623)  
JP 61119094 A 19860606 (198629)  
US 4659611 A 19870421 (198718)  
EP 153737 B1 19930728 (199330) EN 13p  
R: DE FR GB

02/14/2003

DE 3587481 G 19930902 (199336)  
JP 05068877 B 19930929 (199342) 4p  
JP 05070954 B 19931006 (199343) 3p  
JP 06013721 A 19940121 (199408) 4p  
JP 07016088 B2 19950222 (199512) 4p  
JP 07170041 A 19950704 (199535) 4p  
JP 2506270 B2 19960612 (199628) 4p  
ADT EP 153737 A EP 1985-102159 19850227; JP 60178687 A JP 1984-34163 19840227;  
JP 60178688 A JP 1984-34165 19840227; JP 61084089 A JP 1984-204101  
19841001; JP 61119094 A JP 1984-239471 19841115; US 4659611 A US  
1985-706280 19850227; EP 153737 B1 EP 1985-102159 19850227; DE 3587481 G  
DE 1985-3587481 19850227, EP 1985-102159 19850227; JP 05068877 B JP  
1984-239471 19841115; JP 05070954 B JP 1984-34163 19840227; JP 06013721 A  
Div ex JP 1984-34165 19840227, JP 1993-41768 19840227; JP 07016088 B2 Div  
ex JP 1984-34165 19840227, JP 1993-41768 19840227; JP 07170041 A Div ex JP  
1984-239471 19841115, JP 1994-282432 19841115; JP 2506270 B2 Div ex JP  
1984-239471 19841115, JP 1994-282432 19841115  
FDT DE 3587481 G Based on EP 153737; JP 05068877 B Based on JP 61119094; JP  
05070954 B Based on JP 60178687; JP 07016088 B2 Based on JP 06013721; JP  
2506270 B2 Previous Publ. JP 07170041  
PRAI JP 1984-239471 19841115; JP 1984-34163 19840227; JP 1984-34165  
19840227; JP 1984-204101 19841001; JP 1993-41768 19840227; JP  
1994-282432 19841115  
AB EP 153737 A UPAB: 19970502  
High **thermal conductivity** substrates for electronic  
devices are claimed consisting of sintered aluminium nitride contg. at  
least one of Y, the rare earth metals and the alkaline earth metals. A  
conductive path or layer is formed on the substrate using an electrically  
conductive thick film paste. The amount of Y, rare earth or alkali metal  
is 0.01-15 wt.%. The conductive paste is based on Ag, Ag + Pd, Ag + Pt,  
Au/Pt, Au or Cu as the conductive component.  
ADVANTAGE - The high **thermal conductivity** of AlN  
by comparison with those of Al<sub>2</sub>O<sub>3</sub> and resins used in prior art permits  
faster heat dispersion from circuits including power semiconductors and  
similar heat producing devices.  
Dwg.0/0  
L37 ANSWER 18 OF 45 WPIX (C) 2003 THOMSON DERWENT  
AN 1984-288006 [46] WPIX  
DNN N1984-215083 DNC C1984-122403  
TI High expansion glass-ceramic article useful as ferrite support - is  
photo-thermally crystallised and chemically machined.  
DC L01 L03 T03 W04  
IN MCALINN, P  
PA (CORG) CORNING GLASS WORKS  
CYC 6  
PI US 4480044 A 19841030 (198446)\* 7p  
EP 153026 A 19850828 (198535) EN  
R: DE FR GB  
JP 60180934 A 19850914 (198543)  
CA 1224956 A 19870804 (198735)  
EP 153026 B 19880309 (198810) EN  
R: DE FR GB  
DE 3561802 G 19880414 (198816)  
JP 04037016 B 19920618 (199229) 7p  
ADT US 4480044 A US 1984-575902 19840201; EP 153026 A EP 1985-300463 19850124;  
JP 60180934 A JP 1985-14151 19850128; JP 04037016 B JP 1985-14151 19850128  
FDT JP 04037016 B Based on JP 60180934  
PRAI US 1984-575902 19840201  
AB US 4480044 A UPAB: 19930925  
Glass-ceramic has coefft. of **thermal expansion** 120-160

02/14/2003

$\times 10^{-7}/\text{deg.C.}$  and comprises lithium metasilicate, lithium disilicate and quartz and/or cristobalite crystals dispersed in residual glassy matrix. 90% or more of compsn. comprises (wt.% oxide basis) 5.5-15 Li<sub>2</sub>O, 2-25 Al<sub>2</sub>O<sub>3</sub> and 60-85 SiO<sub>2</sub>, wherein Al<sub>2</sub>O<sub>3</sub>:Li<sub>2</sub>O is less than 1.7:1; included is at least one photosensitive metal as 0.001-0.03 Ag or 0.001-1 Cu, calculated respectively as Au, AgCl and Cu<sub>2</sub>O.

Pref. compsn. is 79.8 SiO<sub>2</sub>, 9.4 Li<sub>2</sub>O, 4 K<sub>2</sub>O, 3.9 Al<sub>2</sub>O<sub>3</sub>, 1.5 Na<sub>2</sub>O, 1 ZnO, 0.4 Sb<sub>2</sub>O<sub>3</sub>, 0.012 CeO<sub>2</sub>, 0.12 Ag and 0.0013 Au.

ADVANTAGE - Processing temps. for a known compsn. (Fotoceram(RTM) Code 8603 - US 2971 853) are reduced to modify crystal development and form prod. with coefft. of **thermal expansion** increased from 105 to 120-160  $\times 10^{-7}/\text{deg.C.}$

/6

L37 ANSWER 19 OF 45 WPIX (C) 2003 THOMSON DERWENT

AN 1984-051631 [09] WPIX

DNC C1984-021681

TI Car radiator **copper** alloy - contains nickel and silicon and has good corrosion resistance.

DC M26

PA (FURU) FURUKAWA ELECTRIC CO LTD

CYC 1

PI JP 59009143 A 19840118 (198409)\* 3p

JP 06074468 B2 19940921 (199436) 2p

ADT JP 59009143 A JP 1982-117576 19820706; JP 06074468 B2 JP 1982-117576 19820706

FDT JP 06074468 B2 Based on JP 59009143

PRAI JP 1982-117576 19820706

AB JP 59009143 A UPAB: 19930925

The **copper** alloy comprises, by wt. 0.005-1.0% Ni, 0.005-0.5% Si and the balance Cu.

Useful as the fin member of a radiator for a car. When an antifreezing agent is spread on a road, the radiator is exposed to a corrosive wet atmosphere. The corrosion is brought out by the lamination of Cu<sub>2</sub>O in layers on the surface of the radiator and the segregation of Cl and S at the boundary between the Cu<sub>2</sub>O layer and the **copper** substrate. This corrosion is now inhibited by conjunctly adding Ni and Si to Cu. The addn. of Ni and Si inhibits the formation of laminar Cu<sub>2</sub>O films and their growth, without deteriorating the **thermal conductivity** of Cu.

0/0

L37 ANSWER 20 OF 45 WPIX (C) 2003 THOMSON DERWENT

AN 1982-60405E [29] WPIX

TI **Copper** alloy for automobile radiator fin - contains tin, silver, zinc, magnesium, aluminium, silicon manganese and indium.

DC M26

PA (FURU) FURUKAWA ELECTRIC CO LTD

CYC 1

PI JP 57094539 A 19820612 (198229)\* 4p

PRAI JP 1980-172493 19801205

AB JP 57094539 A UPAB: 19930915

Cu alloy for fin material in an automobile radiator, consists of 0.05-0.5% Sn, 0.004-0.1% P, at least 1 of Ag, Zn, Mg, Al, Si, Mn and In as 0.1-3.0% in total, and the balance Cu.

Conventional fin material is a Cu alloy including Cd and/or Sn 0.1-1.0%, but this has substantially no resistance to corrosion. When radiator performance per unit area and durability of fin material are required to increase as smaller size wall thickness fin material is desired for making lightweight automobiles. The new Cu alloy

02/14/2003

restricts surface of the fin from producing or bleeding **Cu<sub>2</sub>O** oxide to cause corrosion, by the Sn and P components. The Ag, Zn, Al, Sn, Mn or In promotes this restriction effect, without reducing **thermal conductivity** of fin material.

L37 ANSWER 21 OF 45 WPIX (C) 2003 THOMSON DERWENT

AN 1981-39169D [22] WPIX

TI Iron-**copper** composite powder - produced by mixing iron powder with particulate cuprous or cupric oxide or reducing **copper** cpd. and heating in reducing atmos..

DC M22 P53

PA (KAWI) KAWASAKI STEEL CORP.

CYC 1

PI JP 56038401 A 19810413 (198122)\*

JP 59001764 B 19840113 (198406)

ADT JP 56038401 A JP 1979-112754 19790905

PRAI JP 1979-112754 19790905

AB JP 56038401 A UPAB: 19930915

In prodn. of Fe-Cu composite powder, a known iron powder is mixed with particulate of CuO, **Cu<sub>2</sub>O** or a reducing **Cu** cpd 0.5-1.0 wt.% as **Cu** metal and heated to 500-700 deg.C in a reducing atmos so that the metal **Cu** is attached to surface of the iron powder particles in uniform island configuration.

Provides Fe-Cu **composite powder material** which does not suffer from segregation of the **Cu**, has excellent compacting as well as shaping performance, and mechanical properties of the **sintered** body are such that there is little dispersion in dimensions. The Fe powder pref. has specific surface area 50-4000 cm<sup>2</sup>/g, grain size 42-325 mesh by not more than 50%. Grain size of the **Cu** cpd may be under 250 mesh.

L37 ANSWER 22 OF 45 WPIX (C) 2003 THOMSON DERWENT

AN 1981-35375D [20] WPIX

TI Body of diamond, cubic boron nitride and cubic metal oxide particles - and metals, bound into 3 dimensional body by **sintering**, used as cutting material.

DC L02

PA (KURA-I) KURATOMI T

CYC 1

PI JP 56032376 A 19810401 (198120)\*

PRAI JP 1979-105561 19790821

AB JP 56032376 A UPAB: 19930915

Body (I) of diamond, cubic boron nitride and cubic metal oxide particles and metals. The components are bound to each other in network. (I) is prepd. by **sintering** a compsn. of (a) 60-90 wt.% of a diamond - cubic boron nitride mixt. contg. 10-90 wt.% of diamond powder under 4 microns in mean particle size and 90-10 wt.% of cubic boron nitride powder under 4 microns in mean particles size, (b) 20-6 wt.% of one or more of cubic metal oxides selected from CoO, NiO, FeO, MnO, TiO, SiO, **Cu<sub>2</sub>O**, MgO and Y<sub>2</sub>O<sub>3</sub> and (c) 20-4 wt.% of one or more of metallic powders. (c) have m.pt. of under 1100 deg.C, and are of the gp. Fe, Co, Ni, Mn, Ti, Si, **Cu** and Al. The **mixt.** of **materials** is placed in a high temp.-pressure generating chamber and **sintered** at 1300-1700 deg.C under 50000-70000 kg/cm<sup>2</sup>.

Ultra-hard compound body of diamond - cubic boron nitride is obtd.

L37 ANSWER 23 OF 45 WPIX (C) 2003 THOMSON DERWENT

AN 1980-88069C [49] WPIX

TI Cuprous **copper** and/or silver halophosphate glasses - having high electrical conductivity for use in electrochemical devices.

DC L01 L03

02/14/2003

PA (CORG) CORNING GLASS WORKS  
CYC 1  
PI US 4226628 A 19801007 (198049)\*  
PRAI US 1979-61901 19790730  
AB US 4226628 A UPAB: 19930902

Cuprous **copper** and/or silver halophosphate glasses have softening prints <400 degrees C, coefficients of **thermal expansion** (25-300 degrees C) >180x10<sup>-7</sup>/degrees C and room temp. electrical resistivities <108 ohm cm. The glass compsns. in % wt. oxide basis are specified in terms of areas defined in the ternary diagrams of the constituents such as **Cu2O**-CuCl-P2O5; Ag2O-AgCl-P2O5. Several halides may be present in the glass. The glasses may also be thermochromic.

Used in electrochemical devices such as batteries.

L37 ANSWER 24 OF 45 WPIX (C) 2003 THOMSON DERWENT  
AN 1977-80900Y [45] WPIX  
TI Paste for low temp. metallisation of ceramic dielectrics - contains glass and oxides of molybdenum, manganese, **copper**, tungsten and iron and molybdenum.

DC L02 M13  
PA (YARM-I) YARMOLINSKAYA L N  
CYC 1  
PI SU 529143 A 19761208 (197745)\*  
PRAI SU 1975-2092730 19750103  
AB SU 529143 A UPAB: 19930901

Paste used in the low temp. metallisation of ceramic dielectrics comprises (in wt.%): MoO3 40-65; MnO2 5-15; **Cu2O** 0.5-15; glass 3-15; Mo (I) 20-40; WO3 (II) 3.5-15; and Fe2O3 (III) 0.5-2.5. Addn. of (I), (II) and (III) decreases current leakage between the metallising polar, of spacing 0.3-1.5 mm. The glass used contains 0.001 to 5%, alkali and has a coefft. of **thermal expansion** plus-or-minus x 10<sup>-7</sup> deg-1 different to that of the ceramic.

L37 ANSWER 25 OF 45 WPIX (C) 2003 THOMSON DERWENT  
AN 1977-29939Y [17] WPIX  
TI Ceramic capacitors mfr. - based on oxides of titanium and strontium.  
DC L03 V01 X12

PA (MATU) MATSUSHITA ELEC IND CO LTD  
CYC 1  
PI JP 52034356 A 19770316 (197717)\*  
JP 60019134 B 19850514 (198523)  
PRAI JP 1975-110779 19750911  
AB JP 52034356 A UPAB: 19930901

Powdery materials are **sintered** in a neutral or reducing atmos. to prepare semiconductor ceramics. Grain boundary layers are converted into insulating layers by diffusion of impurity to from capacitors by metal-spraying Al, **Cu**, Zn, Pb, Sn or their alloys.

The powdery material consists of 100 pts. wt. of a main component contg. 50.20 to 53.22 mol % of TiO2 and 46.78 to 49.80 mol% of SrO, 0.01 to pts. wt. of at least one metal selected from Ta, Nb, Ti and W, and 0.01 to 0.5 pts. wt. of at least one oxide selected from Ta2O5, Nb2O5, and Sn2O3. The **sintering** temperature is 1300 to 1400 degrees C. As impurity for diffusion, **Cu2O**, Bi2O3, Pb3O4 or MnO2 may be used. The prod. has high capacity, low loss, high resistance and a low temperature **coefficient** of static capacity.

L37 ANSWER 26 OF 45 WPIX (C) 2003 THOMSON DERWENT  
AN 1976-03510X [02] WPIX  
TI Metallising ceramic substrate with silver - using composition contg precious metal and cadmium- **copper**- ruthenium oxides.

02/14/2003

DC L02 M13  
PA (ELEC-N) ELECTRO OXIDE CORP  
CYC 1  
PI US 3929491 A 19751230 (197602)\*  
PRAI US 1974-436352 19740124  
AB US 3929491 A UPAB: 19930901

A metallising compsn. comprises (by wt.) 10-95% of an organic binder free of glass frit, the balance being an intimate mixture comprising (as a proportion of the mixt.), 0.5% of CdO and CuO and/or **Cu<sub>2</sub>O**, in a wt. ratio **copper** oxide : cadmium oxide of 0.15-6 : 1, 0.25-2% of at least one of Pt, Ir, Rh or Os, 0.5-4% of ruthenium oxide and balance Ag and/or Ag<sub>2</sub>O. The compsn. is used for metallising ceramic substrates in the prodn. of printed circuits. The deposited layer is highly resistant to leaching of silver by solder even on prolonged heat treatment, without the use of the high concn. of noble metal previously needed to achieve this. The absence of glass frit improves **thermal conductivity** between substrate and mounted circuit units, and provides improved bonding of the latter.

L37 ANSWER 27 OF 45 WPIX (C) 2003 THOMSON DERWENT  
AN 1975-40698W [24] WPIX  
TI Rubbing seal material for ceramic heat exchanger - has surface layers on metal and metal oxide mixt. contg. fluoride cpd.

DC L02 M13 P42 P73 Q52 Q65 Q78  
PA (FORD) FORD MOTOR CO  
CYC 5  
PI US 3887201 A 19750603 (197524)\*  
DE 2454654 A 19750619 (197526)  
JP 50084612 A 19750708 (197536)  
GB 1481235 A 19770727 (197730)  
CA 1022579 A 19771213 (197801)  
PRAI US 1973-417444 19731119  
AB US 3887201 A UPAB: 19930831

High temp. rubbing seal for use with a gas turbine regenerator ceramic matrix consists of a metallic substrate, pref. a Ni-Cr stainless steel,  $\geq 1$  intermediate layer forming a bond coating and typically contg. 80% Ni and 20% Cr alloy, together with a surface coating layer comprising 75-85% **Cu** and **Cu<sub>2</sub>O**, 9% NaF, 11% LiF<sub>2</sub> and **Cu(NO<sub>3</sub>)<sub>2</sub>**, this layer having a compsn. such that the coefficient of **thermal expansion** matches that of the substrate. This surface coating layer forms a durable glaze as the seal contacts the ceramic matrix at elevated temps. The seal withstands the oxidation effects of water vapour, free O<sub>2</sub>, etc. and so gives an improved seal life. A lubricating glaze is provided over the surface of the seal and retards oxidation of metallic components in the surface layers.

L37 ANSWER 28 OF 45 WPIX (C) 2003 THOMSON DERWENT  
AN 1974-68681V [39] WPIX  
TI Varistor compsns. - contg. bismuth, zinc alkali metal oxides and metal fluorides.

DC L03  
PA (TOKE) TOKYO SHIBAURA ELECTRIC CO  
CYC 1  
PI JP 49041895 A 19740419 (197439)\*  
PRAI JP 1972-86347 19720830  
AB JP 49041895 A UPAB: 19930831

Varistor compsns. consist of Bi<sub>2</sub>O<sub>3</sub> 0.5-20 and (ZnO)<sub>x</sub>(M<sub>2</sub>'O)<sub>y</sub>(M<sub>2</sub>F<sub>3</sub>)<sub>z</sub> (M<sub>2</sub>'O)<sub>y</sub>(M<sub>2</sub>F<sub>3</sub>)<sub>z</sub> (M' = Li, Na, K or **Cu**, M<sub>2</sub> = Cr, Al, Ce, or Y, x = 0.87-0.12, y = 0.12-0.87, and z = 0.01-0.30) 100 pts. by wt. The varistors of the above compsn. have large nonlinearity **coefft.** (alpha) and varistor voltage (Vc), both of which can be easily changed by

02/14/2003

changing the compsn. esp. by changing the Bi2O3 content. In an example, appropriate amts. of ZnO, Li2O, CrF3 and Bi2O3 were mixed well, fired 1 hr. at 800 degrees, crushed, pressed moulded at 1 ton/cm2 and **sintered** at 1100-1300 degrees to give a varistor disc (20 mm dia. x 1 mm thick) of compsn. (ZnO)0.87(Li2O)0.12(CrF3)0.01 100 + Bi2O3 0.5 pts. wt. whose alpha and Vc values were 12.5 and 258 V resp. The alpha and Vc values were 54.1 and 896 V resp. for a varistor of compsn. (ZnO)0.87(Li2O)0.12(YF3)0.1 + Bi2O3 7.0 pts. wt. and they were 71.8 and 973 V resp. for a varistor of compsn. (ZnO)0.61(K2O.Cu2O.Li2O)0.07(AlF3.CeF3.YF3)0.06 100 + Bi2O3 9.6 pts. wt.

L37 ANSWER 29 OF 45 WPIX (C) 2003 THOMSON DERWENT

AN 1973-80488U [52] WPIX

TI **Copper** aluminosilicate glass - having low m pt and low **thermal expansion**.

DC L01

PA (OWEI) OWENS-ILLINOIS INC

CYC 1

PI US 3779781 A (197352)\*

PRAI US 1965-465381 19650621; US 1966-552992 19660525; US 1970-88971 19701112

AB US 3779781 A UPAB: 19930831

A ternary **Cu** glass compsn., with low melting characteristics consists of 60-94 mole % SiO2, 0.5-30 mole % Al2O3, 1.5-35% **Cu2O** + CuO, 0-35% **Cu2O**, 0-35% CuO, **Cu2O** and CuO being expressed as **Cu2O**. The glass pref. has a coefft. of linear **thermal expansion** not over 10 x 10<sup>-7</sup>/degrees C over 0-300 degrees C. The compsn. may be modified by any of NiO, iron oxides, TiO2, B2O3, CoO, and fluoride (AlF3). Glasses are esp. suitable for high resolution mirrors for astronomical telescopes, and also as sealing glasses.

L37 ANSWER 30 OF 45 WPIX (C) 2003 THOMSON DERWENT

AN 1972-54931T [34] WPIX

TI Welding of stainless steel - by first coating with **copper** then heating, then gas welding.

DC M13 M23 P55

PA (SAYA) SAYAMA MFG CO LTD

CYC 1

PI JP 47032901 B (197234)\*

PRAI JP 1963-10294 19630306

AB JP 72032901 B UPAB: 19930831

Method comprises removing oxide coating from stainless steel, to the welded, plating with **Cu** and welding the stainless steel. **Cu** plating is performed by hot dipping or electroplating in a cyanide, sulphate or fluoroboride electrolyte. **Cu** layer, is <=50 mu. This layer may opt. be removed after welding. When the part coated with **Cu** is heated, O2 present reacts with the **Cu** to generate **Cu**. The oxidn. advances to the CuO state with heating, i.e. 4CuO 2 **Cu2O**+O2, (O2 does not come in contact with the surface of the stainless steel). When the material is gas welded, the **Cu2O** reacts with H2 or CO in the acetylene flame as follows:- H2+CuO right arrow h2O+**Cu**, thus completely preventing stainless steel contact with O2.**Cu** layer has good **thermal conductivity**, so that the stainless steel cools more rapidly. The welded material does not, therefore, form Cr carbides.

L37 ANSWER 31 OF 45 WPIX (C) 2003 THOMSON DERWENT

AN 1972-01057T [01] WPIX

TI **Sintered**, foamed glass - made from **copper** glass borosilicate glass mixture.

02/14/2003

DC L01  
PA (OWEI) OWENS-ILLINOIS INC  
CYC 1  
PI US 3623897 A (197201)\*  
PRAI US 1969-833648 19690616  
AB US 3623897 A UPAB: 19930000

The glass is made from a mixture of 7-15 pts. wt. of a **copper** glass contng., in mole. %, 77-78 SiO<sub>2</sub>, 9-10 Al<sub>2</sub>O<sub>3</sub>, 12-13 **Cu<sub>2</sub>O**, 1-2 AlF<sub>3</sub> and 85-93 pts. wt. of a borosilicate glass contng. in mole. %, 81-83 SiO<sub>2</sub>, 11-14 B<sub>2</sub>O<sub>3</sub>, 0.5-2 Al<sub>2</sub>O<sub>3</sub>, 3-5 Na<sub>2</sub>O. The linear thermal **coeff.** of expansion of the **copper** glass (0-300 degrees C) is  $3-10 \times 10^{-7}$ /degrees C and that of the borosilicate glass is  $30-45 \times 10^{-7}$ /degrees C. Used in glass filters and building materials for thermal, electrical and sound insulation.

L37 ANSWER 32 OF 45 WPIX (C) 2003 THOMSON DERWENT  
AN 1970-15008R [10] WPIX  
TI Low expansion glass compositions.  
DC L01 P73  
PA (OWEI) OWENS-ILLINOIS INC  
CYC 1  
PI US 3498876 A (197010)\*  
PRAI US 1966-605585 19661229  
AB US 3498876 A UPAB: 19930831

**Copper**-zinc aluminosilicate glasses are described which have low coefficients of **thermal expansion**. They have compositions (in mole %) in the range 50-94% SiO<sub>2</sub>, 0.5-30% Al<sub>2</sub>O<sub>3</sub>, 1.5-35% CuO + **Cu<sub>2</sub>O**, and 0.5-20% ZnO. The coefficient of expansion is not greater than  $15 \times 10^{-7}$ /degrees C (0-300 degrees). These glasses can be used to seal and bond materials of similar low coefficient of expansion, such as fused quartz and fused silica. They can also be used for forming mirrors in astronomical telescopes.

L37 ANSWER 33 OF 45 JAPIO COPYRIGHT 2003 JPO  
AN 2001-234262 JAPIO  
TI HEAT RADIATING BODY  
IN YOSHIZAKI ATSUHIRO; SHIMIZU IZUMI; FUYU KIYOUHEI; SUZUMURA TAKASHI; KUROKI KAZUMA; FUKUDA KUNIHIRO; KITAJIMA HIRONORI; NAGAI YASUMITSU  
PA HITACHI CAR ENG CO LTD  
HITACHI CABLE LTD  
PI JP 2001234262 A 20010828 Heisei  
AI JP 2000-39075 (JP2000039075 Heisei) 20000217  
PRAI JP 2000-39075 20000217  
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2001  
AB PROBLEM TO BE SOLVED: To provide a heat radiating body having a small **thermal expansion** coefficient and excellent **thermal conductivity** and capable of being produced at a low cost.

SOLUTION: This heat radiating body is composed of a compact 1 consisting of a mixture of **Cu** powder and **cuprous oxide** powder and incorporated with a heat pipe 3 in which a working solution to be evaporated and condensed at prescribed temperature is stored.

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L37 ANSWER 34 OF 45 JAPIO COPYRIGHT 2003 JPO  
AN 2001-223307 JAPIO  
TI HEAT SINK AND MANUFACTURING METHOD THEREFOR  
IN KONDO YASUO; YOSHIDA ISAMU; OKAMOTO KAZUTAKA; ABE TERUYOSHI; AONO YASUHISA; WATABE NORIYUKI  
PA HITACHI LTD  
PI JP 2001223307 A 20010817 Heisei



02/14/2003

AI JP 2000-34309 (JP2000034309 Heisei) 20000207  
PRAI JP 2000-34309 20000207  
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2001  
AB PROBLEM TO BE SOLVED: To provide a heat sink which increases the surface area of a fin and has high heat diffusion and to provide the manufacturing method.  
SOLUTION: In the heat sink, at least a fin part is made to be a **copper sintered** compact, a semiconductor device mounting part is made of a **copper composite material** comprising 20 to 80 vol.% of **cuprous oxide** (**Cu<sub>2</sub>O**) and the fin part is formed of the **copper sintered** body. At least the fin is obtained by reducing the **copper sintered** compact comprising **copper** oxide.  
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L37 ANSWER 35 OF 45 JAPIO COPYRIGHT 2003 JPO  
AN 2001-223261 JAPIO  
TI ELECTROSTATIC CHUCK AND ELECTROSTATIC ATTRACTION DEVICE  
IN KONDO YASUO; MURAKAMI HAJIME; ABE TERUYOSHI; OKAMOTO KAZUTAKA; WATABE NORIYUKI; AONO YASUHISA  
PA HITACHI LTD  
PI JP 2001223261 A 20010817 Heisei  
AI JP 2000-34310 (JP2000034310 Heisei) 20000207  
PRAI JP 2000-34310 20000207  
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2001  
AB PROBLEM TO BE SOLVED: To provide an electrostatic chuck and an electrostatic adsorption device in which there is no warping, cracking nor peeling even if the temperature varies due to heating or cooling.  
SOLUTION: In this electrostatic chuck, a **composite material** which contains **cuprous oxide** (**Cu<sub>2</sub>O**) by 20-80 vol.% and **copper** (**Cu**) and inevitable impurities in the remainder, and whose **thermal expansion** coefficient from room temperature to 300°C is 5×10<sup>-6</sup>-14×10<sup>-6</sup>/°C and heat conductivity is 30-325 W/m.K, is used for an electrode plate 12, a stress relaxation layer or a base plate 14. As a result difference in **thermal expansion** coefficient between an insulation layer 11 and the electrode plate 12 or between the insulation layer and the base plate is made small.  
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L37 ANSWER 36 OF 45 JAPIO COPYRIGHT 2003 JPO  
AN 2001-217363 JAPIO  
TI SEMICONDUCTOR DEVICE AND ITS HEAT SINK  
IN SAITO RYUICHI; KONDO YASUO; KANEDA JUNYA; SUZUKI KIYOMITSU  
PA HITACHI LTD  
PI JP 2001217363 A 20010810 Heisei  
AI JP 2000-27318 (JP2000027318 Heisei) 20000131  
PRAI JP 2000-27318 20000131  
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2001  
AB PROBLEM TO BE SOLVED: To provide a heat sink, a semiconductor device having excellent assembling performance and high reliability and **thermal conductivity**, and the structure of a power converter or a high frequency transistor employing it.  
SOLUTION: In the semiconductor device comprising a semiconductor element, wiring for inputting/outputting signals, and a heat dissipating plate, the heat dissipating plate is made of a **composite material** of **Cu** and at least one kind of particles of **Cu<sub>2</sub>O**, **Al<sub>2</sub>O<sub>3</sub>** and **SiO<sub>2</sub>** and a metal layer bonded to an insulating substrate or the semiconductor element is bonded directly to the heat dissipating plate.  
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02/14/2003

L37 ANSWER 37 OF 45 JAPIO COPYRIGHT 2003 JPO  
AN 2001-210777 JAPIO  
TI SEMICONDUCTOR DEVICE  
IN YONEDA NAE; MIURA HIDEO  
PA HITACHI LTD  
PI JP 2001210777 A 20010803 Heisei  
AI JP 2000-24693 (JP2000024693 Heisei) 20000128  
PRAI JP 2000-24693 20000128  
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2001  
AB PROBLEM TO BE SOLVED: To provide a plastic molded semiconductor device wherein strength reliability is ensured in a plastic molded semiconductor device using a lead (lead frame), heat dissipating property is improved, and disconnection of a bonding wire, decrease of life of a soldered connection part, resin cracks, etc., are prevented.  
SOLUTION: Material is used whose main component is composite alloy of Cu<sub>2</sub>O and Cu which is **sintered** so as to have a **coefficient** of linear expansion small as compared with that of **copper** alloy, while high **thermal conductivity** equivalent to that of **copper** alloy which has been used as lead material is ensured.  
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L37 ANSWER 38 OF 45 JAPIO COPYRIGHT 2003 JPO  
AN 2001-196513 JAPIO  
TI **COMPOSITE MATERIAL**, METHOD OF PRODUCTION AND ITS USE  
IN WATABE NORIYUKI; OKAMOTO KAZUTAKA; KONDO YASUO; ABE TERUYOSHI; AONO YASUHIRO; KANEDA JUNYA  
PA HITACHI LTD  
PI JP 2001196513 A 20010719 Heisei  
AI JP 2000-9969 (JP2000009969 Heisei) 20000113  
PRAI JP 2000-9969 20000113  
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2001  
AB PROBLEM TO BE SOLVED: To provide a **composite copper material** excellent in plastic machining, a method of production, heat dissipation plate of a semiconductor device and a semiconductor device employing it.  
SOLUTION: The **composite copper material** comprises a metal and a granular or rod-like inorganic compound, and contains 10-55 vol.% of **cuprous oxide** (Cu<sub>2</sub>O) and the remainder of **copper** (Cu), and has coefficient of **thermal expansion** of 5×10<sup>-6</sup>-17×10<sup>-6</sup>/°C and **thermal conductivity** of 100-380 W/m.k. It can be produced through a series of processes of melting, casting and machining and can be applied to the heat dissipation plate of a semiconductor device.  
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L37 ANSWER 39 OF 45 JAPIO COPYRIGHT 2003 JPO  
AN 2001-181756 JAPIO  
TI **COMPOSITE MATERIAL**, PRODUCING METHOD THEREFOR AND ITS USE  
IN OKAMOTO KAZUTAKA; KONDO YASUO; WATABE NORIYUKI; KANEDA JUNYA; SUZUKI KIYOMITSU; ABE TERUYOSHI; AONO YASUHIRO  
PA HITACHI LTD  
PI JP 2001181756 A 20010703 Heisei  
AI JP 1999-372682 (JP11372682 Heisei) 19991228  
PRAI JP 1999-372682 19991228  
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2001  
AB PROBLEM TO BE SOLVED: To provide a **copper composite material** having a low **thermal expansion**

02/14/2003

coefficient and high **thermal conductivity** which allow its application e.g. for a heat radiating substrate and a lead frame of a semiconductor device and excellent in bending workability and punching workability, to provide a method for producing the same and to provide a semiconductor device.

SOLUTION: This **composite material** is obtained by coating a **copper composite material** containing **Cu<sub>2</sub>O** of 10 to 55 vol.% and preferably having a **thermal expansion** coefficient in the range from room temperature to 300°C of  $8 \times 10^{-6}$  to  $16 \times 10^{-6}/^{\circ}\text{C}$  and **thermal conductivity** of 100 to 380 W/m.k with **copper** or a **copper alloy**. In the producing method, the same is drawn by a cold or hot working process. The heat radiating substrate and lead frame for a semiconductor and a semiconductor device are provided.

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L37 ANSWER 40 OF 45 JAPIO COPYRIGHT 2003 JPO

AN 2001-073047 JAPIO

TI LOW **THERMAL EXPANSION COPPER ALLOY**,  
SEMICONDUCTOR DEVICE USING THE SAME AND PRODUCTION OF LOW **THERMAL EXPANSION COPPER ALLOY**

IN KUMAMOTO SHINGO; HOSODA SHIGEMI

PA HITACHI METALS LTD

PI JP 2001073047 A 20010321 Heisei

AI JP 1999-251230 (JP11251230 Heisei) 19990906

PRAI JP 1999-251230 19990906

SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2001

AB PROBLEM TO BE SOLVED: To control the thermal expanding characteristics of the alloy to those of the material to be joined and to obtain excellent heat radiability by providing the surface of a **copper alloy** with a two phase metallic structure composed of **copper** and **copper oxide** with a layer of **copper** only.

SOLUTION: **Copper oxide** is preferably composed of **Cu<sub>2</sub>O**.

In the mother phase of **copper** and **copper oxide** grains having low thermal expanding characteristics composing the two phase metallic structure, by changing the volume ratio of **copper oxide**, the control of the thermal expanding characteristics is possible. Using a powdery mixture of **copper powder** and **copper oxide powder**, sintering is executed in a reducing atmosphere, and a layer of **copper** only is formed on the surface side of the **copper alloy** with the two phase metallic structure whose inside is composed of **copper** and **copper oxide** by reduction. Or, using a powdery mixture of **copper powder** and **copper oxide powder**, press-sintering is executed, simultaneously, a board made of **copper** or a vessel made of **copper** arranged at the outside of the whole of the powdery mixture and the powdery mixture sintered body are joined to obtain a low **thermal expansion copper alloy** in which a layer of **copper** only is formed on the surface of the **copper alloy** having the two phase structure composed of **copper** and **copper oxide**.

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L37 ANSWER 41 OF 45 JAPIO .COPYRIGHT 2003 JPO.

AN 2000-311980 JAPIO

TI LEAD FRAME AND SEMICONDUCTOR DEVICE

IN SAITO RYUICHI; KONDO YASUO; KOIKE YOSHIHIKO; KANEDA JUNYA

PA HITACHI LTD

PI JP 2000311980 A 20001107 Heisei

AI JP 1999-121283 (JP11121283 Heisei) 19990428

02/14/2003

PRAI JP 1999-121283 19990428  
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2000  
AB PROBLEM TO BE SOLVED: To obtain a low **thermal expansion**, high **thermal conductivity** lead frame excellent in deformation, and a semiconductor device employing it, by dispersing a specified ratio of compound particles as a mass of intricate shape where a plurality of particles are coupled.  
SOLUTION: Electrolytic **Cu** powder and **Cu<sub>2</sub>O** powder are employed as material powder, mixed at a specified ratio, injected into a die and cold pressed to produce a preliminary molding which is then sintered in an argon atmosphere. **Cu<sub>2</sub>O** aggregates in mixing process and swells in sintering process but the grain size is 50  $\mu\text{m}$  or less and a fine texture is provided where **Cu** phase and **Cu<sub>2</sub>O** phase are dispersed uniformly. 95% or more of **Cu<sub>2</sub>O** particles, in cross-sectional area rate, are dispersed as a mass of irregular shape where a plurality of particles are coupled. Consequently, excellent workability is provided and the shape can be imparted easily.  
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L37 ANSWER 42 OF 45 JAPIO COPYRIGHT 2003 JPO  
AN 2000-311972 JAPIO  
TI SEMICONDUCTOR DEVICE  
IN KANEDA JUNYA; KONDO YASUO; OKAMOTO KAZUTAKA; ABE TERUYOSHI; AONO YASUHISA  
PA HITACHI LTD  
PI JP 2000311972 A 20001107 Heisei  
AI JP 1999-121281 (JP11121281 Heisei) 19990428  
PRAI JP 1999-121281 19990428  
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2000  
AB PROBLEM TO BE SOLVED: To reduce module size by employing an insulating substrate of inorganic oxide principally comprising **Al<sub>2</sub>O<sub>3</sub>** and a heat dissipating substrate composed of a **composite material** of metal and particles of inorganic compound having coefficient of **thermal expansion** smaller than that of the metal.  
SOLUTION: A plurality of alumina **Al<sub>2</sub>O<sub>3</sub>** substrate 103 mounting semiconductor elements are connected, through solder 205, to a heat dissipating substrate 109 composed of a **Cu-Cu<sub>2</sub>O composite material** subjected to Ni plating over the entire surface thereof. Between respective insulating substrates 103, the alumina substrate 103 is wired through solder 209 with the terminal 206 of a case block 208 where the terminal 206 is integrated with a resinous case 207. Since the alumina plate has coefficient of **thermal expansion** larger than that of an **AlN** plate, difference of **thermal expansion** can be reduced as compared with the base material and thereby warp of a module itself can be reduced. Since allowable size of the substrate can be increased using the alumina plate, the number of semiconductor elements to be mounted on one substrate can be increased.  
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L37 ANSWER 43 OF 45 JAPIO COPYRIGHT 2003 JPO  
AN 1999-087104 JAPIO  
TI RESISTOR FOR POWER USE  
IN SHINDO KOJI; ISHIZAKA HIDEAKI; KOBAYASHI MASAHIRO  
PA MITSUBISHI ELECTRIC CORP  
PI JP 11087104 A 19990330 Heisei  
AI JP 1997-239871 (JP09239871 Heisei) 19970904  
PRAI JP 1997-239871 19970904  
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1999  
AB PROBLEM TO BE SOLVED: To provide a resistor for power use having a large heat capacity per unit volume, an appropriate resistance, and a small temperature change rate over a wide temperature range by suppressing the

02/14/2003

resistance drop caused by an electric field and resistance fluctuation caused by the temperature within tolerances by connecting a **sintered** body having a positive temperature **coefficient** of resistance to another **sintered** body having a negative temperature **coefficient** of resistance.

SOLUTION: A **sintered** body having a positive temperature **coefficient** of resistance contains zinc oxide as a main component and titanium and chromium as additional ingredients, with the content of the titanium being adjusted within a range from about 0.5 mol.% to 20 mol.% expressed in terms of titanium oxide and that of the chromium being adjusted within a range from about 0.5 mol.% to 10 mol.% expressed in terms of chromium oxide. Another **sintered** body having a negative temperature **coefficient** of resistance contains zinc oxide as a main component and titanium and **copper** as accessory ingredients, with the content of the titanium being adjusted within a range from about 0.5 mol.% to 20 mol.% expressed in terms of titanium oxide and that of the **copper** being adjusted within a range from about 0.001 mol.% to 0.5 mol.% expressed in terms of **cuprous oxide**. A resistor is obtained by connecting the two kinds of **sintered** bodies each other. The densities of **sintered** bodies are adjusted to about 5.30 g/cm<sup>3</sup> or higher. Therefore, the size of a circuit breaker incorporating the resistor can be reduced.

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L37 ANSWER 44 OF 45 JAPIO COPYRIGHT 2003 JPO  
AN 1993-194051 JAPIO  
TI METHOD FOR JOINING CERAMIC TO METAL  
IN UMADA MASAHIRO; KANEKO TOKI; NISHIMURA NOBUHIKO  
PA MITSUBISHI HEAVY IND LTD  
PI JP 05194051 A 19930803 Heisei  
AI JP 1992-24733 (JP04024733 Heisei) 19920114  
PRAI JP 1992-24733 19920114  
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1993  
AB PURPOSE: To prevent a ceramic member and a metal from peeling and falling off with a thermal stress due to a difference in **thermal expansion** by making the metal internally present in the ceramic member and joining the member to the metallic member by soldering.  
CONSTITUTION: Alumina powder and **cuprous oxide** powder are mixed at about 7:3 ratio with an organic binder and the resultant mixture is press formed, sintered and then polished to afford an alumina substrate 1 having the **cuprous oxide** (1b) in the interior of the alumina (1a). Solders 3 and **copper** electrodes 2 are placed on the alumina substrate 1, heated at about 230°C in an atmosphere of (Ar+H<sub>2</sub>) in a furnace and soldered to carry out integral joining. Thereby, a thermoelectric conversion element having high reliability of joining without causing peeling and falling off even if heat cycles are received is obtained.  
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L37 ANSWER 45 OF 45 JAPIO COPYRIGHT 2003 JPO  
AN 1987-124760 JAPIO  
TI DUMET WIRE  
IN SUGAI TAKESHI  
PA SUMITOMO ELECTRIC IND LTD  
PI JP 62124760 A 19870606 Showa  
AI JP 1985-265826 (JP60265826 Showa) 19851125  
PRAI JP 1985-265826 19851125  
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1987  
AB PURPOSE: To improve the reliability of sealing with glass, and to discriminate its polarity simply by mounting a metallic chromium layer to a wire, in which a **copper** coated layer is fitted to a Fe-Ni

02/14/2003

alloy conductor, and setting up a chromium oxide layer to the surface of the metallic chromium layer.

CONSTITUTION: A **copper** coated layer 2 is mounted on a Fe-Ni alloy conductor 1, a chromium (Cr) layer 3 at a weight ratio of 10% or less is fitted outside the layer 2, and a chromium oxide layer 4 is formed on the surface through a surface treatment. When the chromium layer 3 is shaped in thickness at a weight ratio of 10% or more, an effect having the **thermal expansion** coefficient of a Dumet wire cannot be ignored because the **thermal expansion** coefficient of chromium is large, and there is possibility in which cracks are generated in glass on sealing. Since the surface has the chromium oxide layer, it looks green, thus easily discriminating the titled Dumet wire from normal one with a **cuprous oxide** layer (red).

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02/14/2003

L38 ANSWER 1 OF 26 WPIX (C) 2003 THOMSON DERWENT

AN 2002-467660 [50] WPIX

DNN N2002-368796 DNC C2002-133400

TI **Copper** metallized composition, useful in hybrid integrated circuit device, specified total amount of transition metal particle being added to main component.

DC L03 U11 V04 X12

PA (MURA) MURATA MFG CO LTD

CYC 1

PI JP 2002128581 A 20020509 (200250)\* 30p

ADT JP 2002128581 A JP 2000-314733 20001016

PRAI JP 2000-314733 20001016

AB JP2002128581 A UPAB: 20020807

NOVELTY - 0.5 - 30.0 wt% in a total amount of a transition metal having an average particle size of 0.1 - 10.0 microns and being a IVA-group and/or a VA-group according to a periodic table of an element and/or a transition metallic oxide and/or particle of the transition metallic oxide is added to a main component containing **Cu**.

USE - Useful in a hybrid integrated circuit device.

ADVANTAGE - Corrosion resistance against plating treatment is remarkably improved.

Dwg.0/1

L38 ANSWER 2 OF 26 WPIX (C) 2003 THOMSON DERWENT

AN 2001-494236 [54] WPIX

DNN N2001-366123

TI Thin film capacitor for computer, has electrodes made of **composite material** having **copper** and **cuprous oxide** as principal components.

DC V01

PA (HITA) HITACHI LTD

CYC 1

PI JP 2001185443 A 20010706 (200154)\* 4p

ADT JP 2001185443 A JP 1999-363880 19991222

PRAI JP 1999-363880 19991222

AB JP2001185443 A UPAB: 20010924

NOVELTY - The thin film capacitor includes dielectric layer (21) interposed between electrodes (11,12) formed on a substrate (1). The electrodes are made of **composite material** having **copper** and **cuprous oxide** as the principal components.

USE - For electronic devices such as computer.

ADVANTAGE - Uses **copper** for electrode formation, which is inexpensive and has high electric conductivity.

DESCRIPTION OF DRAWING(S) - The figure shows the sectional view of thin film capacitor.

Substrate 1

Electrodes (11,12)

Dielectric layer 21

Dwg.1/7

L38 ANSWER 3 OF 26 WPIX (C) 2003 THOMSON DERWENT

AN 2001-447716 [48] WPIX

DNN N2001-331361

TI Fire-proof cable with core including oxygen-generating material and insulated wires, covered with overlapping shield tape layer and sheath, for use in buildings.

DC X12

PA (HITD) HITACHI CABLE LTD

CYC 1

02/14/2003

PI JP 2001155555 A 20010608 (200148)\* 3p  
ADT JP 2001155555 A JP 1999-334412 19991125  
PRAI JP 1999-334412 19991125  
AB JP2001155555 A UPAB: 20010829

NOVELTY - Fire-proof cable with a shield consists of a circular cable core of insulated electric wires with inclusion materials, wound together; an overlapping shield tape layer wound on the core; and a sheath covering the shield tape. The inclusion **materials** are a **mixture** which generates oxygen.

USE - For cables for use in buildings.

ADVANTAGE - The cable does not carbonize even at high temperatures.

DESCRIPTION OF DRAWING(S) - Cross-section through the cable

Conductor 1

Insulating layer 2

Sheath layer 3

Overlapping shield tape layer 10

mixed oxygen-generating material 11

Dwg.1/1

L38 ANSWER 4 OF 26 WPIX (C) 2003 THOMSON DERWENT

AN 2000-672242 [65] WPIX

DNN N2000-498374 DNC C2000-203592

TI **Composite material** for electrostatic dissipation comprising zirconia and a conductive metal oxide.

DC L03 X12 X25

IN BURLINGAME, N H; BURLINGAME, N

PA (XYLO-N) XYLON CERAMIC MATERIALS INC

CYC 94

PI US 6136232 A 20001024 (200065)\* 4p

WO 2001012572 A1 20010222 (200112) EN

RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ  
NL OA PT SD SE SL SZ TZ UG ZW

W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM  
DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC  
LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE  
SG SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW

AU 2000065385 A 20010313 (200134)

ADT US 6136232 A US 1999-374149 19990813; WO 2001012572 A1 WO 2000-US22035  
20000811; AU 2000065385 A AU 2000-65385 20000811

FDT AU 2000065385 A Based on WO 200112572

PRAI US 1999-374149 19990813

AB US 6136232 A UPAB: 20001214

NOVELTY - **Composite material** comprises 65-95 vol.% zirconia and 5-35 vol.% conductive metal oxide. The material has an absolute temperature coefficient of volume resistivity of not more than 1.8% per degree C at a temperature of 25-75 degrees C.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are included for:

(1) a **composite material** as above where the material has a change in the absolute volume resistivity of not more than 70% in a voltage range of 1-100V;

(2) a **composite material** as above where the change in absolute volume resistivity is not more than 200%;

(3) a **composite material** as above where the metal oxide comprises a perovskite oxide of the formula  $A_xB_yCrO_3$  (A is selected from La, Y, scandium (Sc), neodymium (Nd), ytterbium (Yb), europium (Er), gadolinium (Gd), samarium (Sm), dysprosium (Dy) and mixtures; B is selected from barium (Ba), strontium (Sr), Ca, Mg and mixtures; x is 0.5-1; y is 0-0.5; and x+y is ca. 1); and

(4) a **composite material** containing 65-95 vol.% of a toughened zirconia including 2.6-20% of a stabilizing metal oxide in which the stabilizing agent is selected from yttria and stabilizing rare



02/14/2003

earth oxides, magnesia, calcia and mixtures, and 5-95 vol.% electroconductive perovskite type metal oxide.

USE - Electrostatic dissipation. Used especially in the semiconductor industry as handling jigs, tweezers, conveying arms, etc.

ADVANTAGE - The **composite material** has good electroconductive and mechanical properties. Provide electrostatic dissipation while still providing insulation against electrical shorts.  
Dwg.0/0

L38 ANSWER 5 OF 26 WPIX (C) 2003 THOMSON DERWENT

AN 1995-078253 [11] WPIX

DNC C1995-035315

TI **Mixture** for friction **material** eg. for brakes or clutches - contg. friction control agent binder and **copper** cpd..

DC A88 E32 L02

PA (HITB) HITACHI CHEM CO LTD

CYC 1

PI JP 07003247 A 19950106 (199511)\* 7p

ADT JP 07003247 A JP 1993-143115 19930615

PRAI JP 1993-143115 19930615

AB JP 07003247 A UPAB: 19950322

The **mixt.** for friction **material** contains (a) friction controlling agent, (b) binder and (c) **copper** cpd. Also claimed is a friction material prepared by impregnating base fibre with the mixt. and curing the binder.

Base fibre for the mixt. includes inorganic fibre such as glass, carbon and ceramic fibres and organic fibre such as aromatic polyamide, phenolic and polyacrylonitrile fibres. (a) is present in 20-60 (pref. 20-40) wt.%. (b) is thermosetting resin compsn., rubber latex and/or rubber soln. Pref. resin compsns. are phenolic resin compsn. and methylated melamine resin compsn. and is used in 10-50 wt.%. The rubber latex or rubber soln. is used in 5-20 wt.% by solid. (c) is one or more of **cuprous oxide**, cupric oxide, **copper** hydroxide, **copper** carbonate or hydrate, **copper** iodide, cuprous sulphate, cupric sulphate, cuprous sulphide and cupric sulphide and it is present in 0.1-10 wt.%.

ADVANTAGE - The **mixt.** for friction **material** has well-balanced strength and frictional properties and is useful for brake lining, disc pad, clutch facing, etc.

L38 ANSWER 6 OF 26 WPIX (C) 2003 THOMSON DERWENT

AN 1993-293402 [37] WPIX

DNC C1993-130418

TI Glass for producing glass-crystalline material - contains oxide(s) of silicon, aluminium, calcium, magnesium and sodium, pigments, and additional fluoride and potassium oxide.

DC G01 G02 L01

IN KABANOV, N P; PAVLUSHKIN, N M; SARKISOV, P D

PA (MEEN) MOSC MENDELEEV CHEM TECHN INST

CYC 1

PI SU 907987 A1 19920907 (199337)\* 4p

ADT SU 907987 A1 SU 1980-2955114 19800711

PRAI SU 1980-2955114 19800711

AB SU 907987 A UPAB: 19931123

Addn. of K<sub>2</sub>O and fluoride to the glass for producing glass-crystalline materials for use inbuilding, improves its properties. The mixt. contains (in wt.%): SiO<sub>2</sub> 55-60, Al<sub>2</sub>O<sub>3</sub> 6-9, CaO 17-25, MgO 3-10, Na<sub>2</sub>O 1-2, pigments 0.1-1.5, K<sub>2</sub>O 5-7 and F 1-1.8, and is melted at 1450-1480 deg. C in a weakly oxidising atmos. (except when **Cu<sub>2</sub>O** is used as pigment), and formed into a continuous strip or into tiles.

The oxides of Co, Cr, Ni, **Cu**, Cr and Sb are used as

02/14/2003

pigments.

ADVANTAGE - The **mixt.** yields a **material** with a granite-like structure contg. spherulite inclusions, and is more decorative. Bul.33/7/9.92.

Dwg. 0/0

L38 ANSWER 7 OF 26 WPIX (C) 2003 THOMSON DERWENT

AN 1991-137256 [19] WPIX

DNN N1991-105339 DNC C1991-059313

TI Plate-like material providing anti-mould and antibacterial properties - has soluble glass powder contg. silver and/or **copper** dispersed or buried in plate.

DC A92 A93 D22 L02 P73

PA (ISHT) ISHIZUKA GLASS KK

CYC 1

PI JP 03075142 A 19910329 (199119)\*

ADT JP 03075142 A JP 1989-211912 19890817

PRAI JP 1989-211912 19890817

AB JP 03075142 A UPAB: 19930928

The material comprises a soluble glass powder contg. at least one of Ag and **Cu** or its **mixt** with another **material** dispersed and buried on the surface of a plate or sheet material.

USE/ADVANTAGE - The sheet or plate material providing anti-mould and anti-bacterial properties is useful for container of foods and interior material of buildings.

In an example, 0.01 wt % based on gypsum board of soluble glass powder of particle size up to 20 microns comprising 100 pts. wt. of a glass comprising 60 mol % B<sub>2</sub>O<sub>3</sub>, 30 mol % SiO<sub>2</sub> and 10 mol % Na<sub>2</sub>O and 15 pts.wt **Cu<sub>2</sub>O**, was sprayed by an air gun on a gypsum board before hardening and it was pressed with a roller to bury the powder on the gypsum board. The test pieces cut from the board showed anti-mould property completely for Penicillium citrinum and the other kind of mould in 4 weeks at 27 deg C on the test according to JIS Z 2911.  
91059313

L38 ANSWER 8 OF 26 WPIX (C) 2003 THOMSON DERWENT

AN 1989-096338 [13] WPIX

DNN N1989-073134 DNC C1989-042650

TI Oxide superconducting material mfr. - by dispersing oxide superconducting **material** powder **mixt.** in mixed alcohol-water solvent, dissolving e.g. chloride, etc..

DC L03 X12

PA (HITA) HITACHI LTD

CYC 1

PI JP 01043921 A 19890216 (198913)\* 3p

ADT JP 01043921 A JP 1987-199800 19870812

PRAI JP 1987-199800 19870812

AB JP 01043921 A UPAB: 19930923

Oxide superconducting material is made by dispersing the powder uniformly mixed with specified amt. of raw material powder of oxide superconducting material into a mixed solvent of alcohol and water; then dissolving at least one of chloride, nitrate, sulphate, and acetate contg. at least one of the cation components in the components of the oxide superconducting materials; coating the oxide superconducting material of an electrically conductive substance by an electrophoretic coating method; followed by heat treating the coating.

The raw material powder of the oxide superconducting material, pref. comprises Y<sub>2</sub>O<sub>3</sub>, BaO, CuO and **Cu<sub>2</sub>O**, and the component soluble in a mixed solvent is at least one of chloride, nitrate, sulphate, and acetate comprising at least one of Y, Ba and **Cu** ions.

USE - For making intricately shaped superconducting material with

02/14/2003

good efficiency.  
1/1

L38 ANSWER 9 OF 26 WPIX (C) 2003 THOMSON DERWENT

AN 1989-076869 [10] WPIX

DNN N1989-058647 DNC C1989-034185

TI Forming shaped **materials** from exothermic **mixtures** - by plasma spraying in oxygen-free gas under conditions so that materials melt without reacting.

DC A88 L02 M13 P42 P73

IN KELLY, M D

PA (MONS) MONSANTO RES CORP; (USAT) US DEPT ENERGY

CYC 1

PI US 4806384 A 19890221 (198910)\* 3p

US 55219 A0 19890404 (198926)

ADT US 4806384 A US 1987-55219 19870529

PRAI US 1987-55219 19870529

AB US 4806384 A UPAB: 20011211

An exothermically reacting material is formed into a shaped body by deposition onto a substrate from a plasma spray. An oxygen-free gas is used to form the plasma jet which is directed towards but does not impinge on the substrate. The material in finely divided form is injected into the gas stream, the conditions being such that the material is melted without undergoing chemical reaction.

Pref. the plasma temp. is 15000-30000 deg C and the **material** is a **mixture** of Al and Fe<sub>2</sub>O<sub>3</sub>, of Al and **Cu<sub>2</sub>O** or of Ti and B, any of which may be diluted with ZrO<sub>2</sub>. The substrate may be of graphite or of a polytetrahaloethane. The material may be introduced at 40-60 g/min into a gas flow of 40-60 cu ft/hr.

USE/ADVANTAGE - One-shot chemical heat sources esp for welding. Shaped bodies can be formed of configurations not obtainable by pressing powders e.g. long thin-walled bodies.  
Dwg.0/3

L38 ANSWER 10 OF 26 WPIX (C) 2003 THOMSON DERWENT

AN 1986-255496 [39] WPIX

DNC C1986-110273

TI **Copper** and carbon fibre **composite material** - is prepd. by passing composite bundle through hot roller.

DC M22

PA (HITA) HITACHI LTD

CYC 1

PI JP 61183423 A 19860816 (198639)\* 4p

ADT JP 61183423 A JP 1985-21728 19850208

PRAI JP 1985-21728 19850208

AB JP 61183423 A UPAB: 19930922

Prodn. of long length **Cu-C fibre composite material**, using a bundle **Cu-coated C-fibre**, involves passing composite **Cu** and C-fibre continuously through hot roller, wherein the surface of **Cu-coated C-fibre** is oxidised prior to making the composite, followed by reducing resulting **Cu** oxides after making composite of **Cu** and C-fibre through said **Cu** oxides.

USE/ADVANTAGE - Agglomeration of C-fibres during combining process of **Cu** and fibre, can be prevented, as preferential plastic flow of **Cu** coating is suppressed by the presence of **Cu** oxides (**Cu<sub>2</sub>O**, **CuO**), during said processing. Resulting composite structure has uniformly oriented **Cu-coated fibres**.

In an example, a bundle of **Cu-coated C-fibres** of 3000 single yarn (volume fraction C-fibre; 45%, continuous fibre) was passed through 400 deg.C electric furnace in air in one directional tension of

02/14/2003

200g, then supplied between two grooved rolls around which was held N<sub>2</sub> atmos., and passed through under conditions: temp. at the contact portion of 1000 deg.C (adjusting current passed 1200 A(max.)); loading 500 kg to rolls; feed rate of fibre of 4 cm/min.

The composite Cu-coated C-fibre thus obt'd., had structure where C-fibre was surrounded with Cu, further Cu<sub>2</sub>O or CuO was formed thereon.

After the composite was reduced in H<sub>2</sub> atmos. at 400 deg.C for 30 mins., Cu oxides formed on Cu coating was dissipated, and one directional Cu-C fibre composite could be obt'd. Further, on said Cu-C fibre composite, Ni plating of 2-3 microns in thickness was applied, followed by heat treatment in H<sub>2</sub> atmos. at 400 deg.C for 10 mins. for improving adherence of Ni coating.

There were no defects of coating such as cracks and blisters on the coating. The composite was sound in structure and had no agglomeration of fibres causing defects of Ni coatings.  
0/0

L38 ANSWER 11 OF 26 WPIX (C) 2003 THOMSON DERWENT

AN 1986-221251 [34] WPIX

DNC C1986-095191

TI Compsn. for joining and tallising of ceramics - contains **copper** or **copper** oxide, aluminium, tin, nickel, chromium or its alkyl carbonate(s).

DC L02 M13

PA (OKUP) OKUNO PHARM IND KK

CYC 1

PI JP 61151079 A 19860709 (198634)\* 10p

ADT JP 61151079 A JP 1984-271208 19841221

PRAI JP 1984-271208 19841221

AB JP 61151079 A UPAB: 19930922

The compsn. (1) contains 100 pts. wt. of at least one of metallic Cu, cuprous oxide, and cupric oxide, and 300 pts. wt. of at least one of Al, Sn, Ni, Cr, (CnH<sub>2</sub>n+1COO)<sub>3</sub>Al, (CnH<sub>2</sub>n+1COO)<sub>2</sub>Sn, (CnH<sub>2</sub>n+1COO)<sub>2</sub>Ni, and (CnH<sub>2</sub>n+1COO)<sub>3</sub>Cr (n = 0 or 1-8).

USE/ADVANTAGE - (1) is used to join ceramics and ceramics, or metal and ceramic, or metalise surfaces of ceramics. By the use of (1), heating temp. range in joining and metallising ceramics is widened. The joining strength between the ceramic and a subject joined, and the adhesion between the ceramic and metallised film are very high. The metallised film on the ceramic surface has high electrical conductivity, after being joined by (1), the ceramic material is used as **composite material** in building materials, tools, mechanical materials, and household articles.  
0/0

L38 ANSWER 12 OF 26 WPIX (C) 2003 THOMSON DERWENT

AN 1986-031449 [05] WPIX

DNN N1986-022727 DNC C1986-013077

TI Joining ceramic and metallic materials - by heating and pressing in autoclave using powdered pressing medium then welding.

DC L02 M23 P55

PA (MITO) MITSUBISHI HEAVY IND CO LTD

CYC 1

PI JP 60251179 A 19851211 (198605)\* 8p

ADT JP 60251179 A JP 1984-103728 19840524

PRAI JP 1984-103728 19840524

AB JP 60251179 A UPAB: 19930922

Joining part of ceramic is made cylindrical and a groove is formed in the middle of the cylinder in its circumferential direction. The metallic tube of which one end is closed, is fitted by covering on the cylindrical part

02/14/2003

of the ceramic material and hermetically sealed in a receptacle together with powdery pressing medium. The ceramic and metallic tube are united by diffusion by heating and pressing using autoclave. Then the metallic tube and metallic material are joined by welding.

Pref. Ni and metallic oxide, nitride or carbide, or **Cu** and metallic oxide, nitride or carbide are coated on the surface of cylindrical part of the ceramic body or on the inner surface of the metallic tube as the insert material. Inserting **material** is a **mixt.** of one of **Cu<sub>2</sub>O**, NiO, SiO<sub>2</sub>, FeO, AgO, Al<sub>2</sub>O<sub>3</sub>, MoO, TiO<sub>2</sub>, ZnO, AuO, Cr<sub>2</sub>O<sub>3</sub>, CoO, ZrO<sub>2</sub>, TaO, WO<sub>2</sub>, NbO, MgO, CaO and Y<sub>2</sub>O<sub>3</sub> and one of **Cu**, Ni, Si, Fe, Ag, Al, Mo, Ti, Zn, Au, Cr, Co, Zr, Ta, W, Nb and Mg. Esp. insert material is Ni, **Cu** or Cr.

USE/ADVANTAGE - Ceramic rotor and metallic shaft are joined effectively, (i.e., turbocharger, gas turbine, drill of excavator, etc. are produced effectively.).

0/5

L38 ANSWER 13 OF 26 WPIX (C) 2003 THOMSON DERWENT

AN 1986-024654 [04] WPIX

DNN N1986-017956 DNC C1986-010312

TI Joining ceramics to metal - by forming conical joint faces on metal pipe and ceramics pt., diffusion bonding and welding.

DC L02 M23 P55

PA (MITO) MITSUBISHI HEAVY IND CO LTD

CYC 1

PI JP 60246275 A 19851205 (198604)\* 6p

ADT JP 60246275 A JP 1984-98568 19840518

PRAI JP 1984-98568 19840518

AB JP 60246275 A UPAB: 19930922

The joining part of ceramic material is made conical and a metallic pipe is made to have a conical inside wall of the same inclination as the conical part of ceramic material. The bodies are fitted with press-heating and joined by diffusion, then the metallic pipe is joined with metallic material by welding.

Pref. a mixt. of Ni and metallic oxide or nitride or carbide, or mixt. of **Cu** and metallic oxide or nitride or carbide is coated on the surface of the conical joining part of ceramic or on the inside wall of the metallic pipe as an inserting **material**. Pref. a **mixt.** of one of **Cu<sub>2</sub>O**, NiO, SiO<sub>2</sub>, FeO, AgO, Al<sub>2</sub>O<sub>3</sub>, MoO, TiO<sub>2</sub>, ZnO, AuO, Cr<sub>2</sub>O<sub>3</sub>, CoO, ZrO<sub>2</sub>, TaO, WO<sub>2</sub>, NbO, MgO, CaO and Y<sub>2</sub>O<sub>3</sub> and one of **Cu**, Ni, Si, Fe, Ag, Al, Mo, Ti, Zn, Au, Cr, Co, Zr, Ta, W, Nb and Mg is employed as the inserting material.

USE/ADVANTAGE - Ceramic and metallic materials are joined firmly and effectively. Method is esp. useful for joining ceramic rotors and metallic shafts in turbochargers, gas turbines, excavation drills, etc.

0/3

L38 ANSWER 14 OF 26 WPIX (C) 2003 THOMSON DERWENT

AN 1985-161007 [27] WPIX

DNC C1985-070354

TI Metal bonding to oxide ceramic using metal and metal oxide - formed by e.g. ion plating on ceramic and thermally reacted with surface prior to brazing or diffusion welding to metal.

DC L02 M23 P55

IN FUKAYA, M; HIRAI, M; FUKAYA, Y; HIRAI, S

PA (MITO) MITSUBISHI JUKOGYO KK

CYC 6

PI EP 147360 A 19850703 (198527)\* EN 23p

R: DE FR GB IT

JP 60131875 A 19850713 (198534)

US 4763828 A 19880816 (198835)

02/14/2003

JP 03067986 B 19911024 (199147)  
EP 147360 B1 19920805 (199232) EN 9p  
R: DE FR GB IT  
DE 3485859 G 19920910 (199238)  
ADT EP 147360 A EP 1984-730141 19841213; JP 60131875 A JP 1983-238818  
19831220; US 4763828 A US 1986-935067 19861121; JP 03067986 B JP  
1983-238818 19831220; EP 147360 B1 EP 1984-730141 19841213; DE 3485859 G  
DE 1984-3485859 19841213, EP 1984-730141 19841213  
FDT DE 3485859 G Based on EP 147360  
PRAI JP 1983-238818 19831220  
AB EP 147360 A UPAB: 19930925  
Oxide ceramic is coated with a mixt. of at least one oxide from  
**Cu<sub>2</sub>O**, NiO, SiO<sub>2</sub>, FeO, AgO, Al<sub>2</sub>O<sub>3</sub>, MoO, TiO<sub>2</sub>, ZnO, AuO, Cr<sub>2</sub>O<sub>3</sub>, CoO,  
ZrO<sub>2</sub>, TaO, WO<sub>2</sub>, NbO, MgO, CaO and Y<sub>2</sub>O<sub>3</sub> and at least one metal from  
**Cu**, Ni, Si, Fe, Ag, Al, Mo, Ti, Zn, Au, Cr, Co, Zr, Ta, W, Nb and  
Mg. Application is by spray coating or ion plating. Coating is thermally  
treated to develop a metallurgical bond and bonded to metal member by  
brazing or diffusion welding.  
ADVANTAGE - Thermal mismatch of ceramic and metal members is  
alleviated by cermet insert layer, esp. as compared to use of metal foil  
or metal powder mixt. In partic. oxide component layer bonds effectively  
with ceramic, and metal is selected to be same as metal member. Method is  
applicable to complex shapes.  
0/1

L38 ANSWER 15 OF 26 WPIX (C) 2003 THOMSON DERWENT  
AN 1985-144587 [24] WPIX  
DNN N1985-108905 DNC C1985-063059  
TI **Composite structural material** with good impact  
resistance - has at least one layer of martensitic alloy laminated to at  
least one ceramic layer.  
DC L02 P73  
PA (SUME) SUMITOMO ELECTRIC IND CO  
CYC 1  
PI JP 60079946 A 19850507 (198524)\* 4p  
ADT JP 60079946 A JP 1983-189037 19831007  
PRAI JP 1983-189037 19831007  
AB JP 60079946 A UPAB: 19930925  
Structural material comprises laminating at least one layer of alloy layer  
transformable to thermo-elastic martensite with at least one layer of  
ceramic material by contacting powdery alloy having constitution  
transformable to thermo-elastic martensite or powdery mixt. forming such  
constitution with the ceramic material and hot pressing the laminating  
powder.  
The ceramic material is pref. Al<sub>2</sub>O<sub>3</sub>, ZrO<sub>2</sub> or Si<sub>3</sub>N<sub>4</sub>. The alloy  
transformable to thermo-elastic martensite is pref. beta-brass contg.  
essentially 10-45 wt.% of Zn and max. 12 wt.% of Al, the balance being  
**Cu** or beta-brass contg. 3-15 wt.% of Al and max. 10 wt.% of Ni,  
the balance being **Cu**.  
ADVANTAGE - The structural material has improved resistance against  
impact and abrasion.  
In an example, 6mm% thick tile of Al<sub>2</sub>O<sub>3</sub> was coated with 4mm  
thick-alloy comprising 25% **Cu**, 4.5% Zn and 70.5% Al by  
**Cu<sub>2</sub>O** process. It had breaking impact strength of 1.50 times that  
for control tile comprising 10 mm-thick Al<sub>2</sub>O<sub>3</sub> tile.  
0/0

L38 ANSWER 16 OF 26 WPIX (C) 2003 THOMSON DERWENT  
AN 1982-72978E [35] WPIX  
TI **Composite material** reinforced with carbon fibre -  
contg. sodium and/or potassium, also oxide(s) of manganese, iron or

02/14/2003

**copper.**

DC A32 A94  
PA (TORA) TORAY IND INC  
CYC 1  
PI JP 57117535 A 19820722 (198235)\* 8p  
PRAI JP 1981-3210 19810114  
AB JP 57117535 A UPAB: 19930915

Carbon-fibre reinforcing **composite materials** comprise carbon fibres contg. Na and/or K in more than 0.08 wt.% and also contain Mn, Co or their respective oxide, Fe or Cu alone or together, in 0.05-6.0 wt.% of carbon fibre content are dispersed within matrix resin. The carbon fibres may be obtd. from acrylic fibres. The metals or their oxides may be e.g. MnO, MnO<sub>2</sub>, FeO, Fe<sub>2</sub>O<sub>3</sub>, CoO, CuO and Cu<sub>2</sub>O. The matrix resins may be e.g. epoxy resins and polyester resins.

The **composite materials** have residual rates after combustion of less than 5 wt.%. In addn., the electric resistance of residual carbon fibres is more than 3 x 10 power 5 ohm/cm/fibre, showing high electric insulation. The materials can also be burned completely, leaving no floating sepd. carbon fibres. Therefore, these produce no problems such as environmental and air pollutions.

L38 ANSWER 17 OF 26 WPIX (C) 2003 THOMSON DERWENT  
AN 1981-08545D [06] WPIX  
TI Non-aq. electrolyte battery - comprises lithium metal cathode active **material** and **mixt.** of iron sulphide and **copper** oxide as anode active material.

DC L03  
PA (HITM) HITACHI MAXELL KK  
CYC 1  
PI JP 55154072 A 19801201 (198106)\*  
PRAI JP 1979-61145 19790517  
AB JP 55154072 A UPAB: 19930915

Battery comprises as the cathode active material, metal lithium and as the anode active **material mixt.** of iron sulphide with 5 to less than 30 wt.% **copper** oxide. Battery total height change after discharge is reduced and discharge capacity is stable in storage.

In an example, Li<sub>2</sub>S and Fe produced in reaction of 2Li + FeS gives Li<sub>2</sub>S + Fe were accumulated at anodic side and the anode was expanded. Mixing **copper** oxide, the expansion was prevented, but when the **copper** oxide was excessively added, **copper** oxide was dissolved in electrolyte in high temp. storage to deteriorate the capacity. FeS, Fe<sub>2</sub>S<sub>3</sub>, FeS<sub>2</sub> etc. and Cu<sub>2</sub>O, CuO etc. could be used. The anodic mixture was moulded with pressure 3t/cm<sup>3</sup> into an anode of 11 mm dia. x 0.85 mm thickness.

L38 ANSWER 18 OF 26 WPIX (C) 2003 THOMSON DERWENT  
AN 1981-08543D [06] WPIX  
TI Non-aqueous electrolyte battery - uses lithium as cathodic **material** and **mixt.** of iron sulphide and **copper** oxide as anodic material.

DC L03  
PA (HITM) HITACHI MAXELL KK  
CYC 1  
PI JP 55154070 A 19801201 (198106)\*  
JP 01051854 B 19891107 (198948)  
ADT JP 55154070 A JP 1979-61142 19790517  
PRAI JP 1979-61142 19790517  
AB JP 55154070 A UPAB: 19930915

Nonaqueous electrolyte battery comprises metal lithium as a cathodic active **material** and **mixture** of iron sulphide + **copper** oxide as an anodic active **material**.

02/14/2003

**Mixture** ratio of iron sulphide: **copper** oxide is 70:30-25:75 by wt. A large discharge capacity is obtd.

In further detail, FeS 50 pts.wt. + CuO 50 pts. wt. were mixed, and moulded at a pressure of 3 t/cm<sup>2</sup> into an anode of 11 mm dia x 0.85 mm thickness. A battery using the anode, had at least 100 mAh discharge capacity (up to terminal voltage 1.0 V, at 20 deg.C, 6.5 KO const.-resistance discharge). Discharge capacity was improved within the mixt. ratio 70:30-25:75. Opt., Fe<sub>2</sub>S<sub>3</sub> or FeS<sub>2</sub> and **Cu<sub>2</sub>O** were also effectively used.

L38 ANSWER 19 OF 26 WPIX (C) 2003 THOMSON DERWENT

AN 1976-34824X [19] WPIX

TI **Copper** graphite series **composite** powder  
**material** - contg cupric oxide as endothermic reactant.

DC J04 L02 M22 P53

PA (FUJD) FUJIKURA CABLE WORKS LTD

CYC 1

PI JP 51034860 A 19760324 (197619)\*

PRAI JP 1974-106793 19740918

AB JP 51034860 A UPAB: 19930901

In prodn. of a **copper**-graphite series **composite material** of wide use such as in powder metallurgy, as electric brushes, chemical catalysts and the like by heating a mixt. of cupric oxide, a halide and graphite in a non-oxidizing atmosphere, partic. of high mixing ratio of the cupric oxide or having **copper** content >80 wt.%, a method for preventing the **copper** once pptd. on the graphite from being liquated caused by exthothermic reaction of the cupric oxide. As endothermic reactant, **cuprous oxide** in amt. 10-30 parts wt. is added to 100 pts. of the cupric oxide.

L38 ANSWER 20 OF 26 JAPIO COPYRIGHT 2003 JPO

AN 2001-339020 JAPIO

TI SEMICONDUCTOR MODULE

IN SUZUKI ATSUSHI; KONDO YASUO; OKAMOTO KAZUTAKA; INNAMI TOSHIYUKI

PA HITACHI LTD

PI JP 2001339020 A 20011207 Heisei

AI JP 2000-161116 (JP2000161116 Heisei) 20000526

PRAI JP 2000-161116 20000526

SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2001

AB PROBLEM TO BE SOLVED: To provide a semiconductor module of which cooling performance is improved by directly bringing a cooling fluid in contact with a semiconductor module substrate, and which is inexpensive and can meet a specification for cooling and fatigue durability by giving a controllability to the physical property of a heat radiating substrate. SOLUTION: This semiconductor module is provided with a plurality of semiconductor elements 102 joined with a heat radiating substrate 104 by means of an insulation substrate 103. The heat radiating substrate 104 is made of **composite material** of **copper** (Cu) and cuprous oxide (Cu<sub>2</sub>O).  
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L38 ANSWER 21 OF 26 JAPIO COPYRIGHT 2003 JPO

AN 2001-210768 JAPIO

TI ELECTRONIC DEVICE

IN YOSHIDA ISAMU; KONDO YASUO

PA HITACHI LTD

PI JP 2001210768 A 20010803 Heisei

AI JP 2000-17754 (JP2000017754 Heisei) 20000121

PRAI JP 2000-17754 20000121

SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2001

AB PROBLEM TO BE SOLVED: To provide an electronic device having a low



02/14/2003

coefficient of terminal expansion, high heat dissipation and high workability by solving the problems in conventional art.  
SOLUTION: The electronic device comprises a semiconductor device, and a heat sink fixed to the semiconductor device wherein the heat sink is made of a **composite material of copper** (Cu) and **copper** (I) oxide (Cu<sub>2</sub>O).  
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L38 ANSWER 22 OF 26 JAPIO COPYRIGHT 2003 JPO  
AN 2001-210751 JAPIO  
TI SEMICONDUCTOR DEVICE  
IN KAZAMA ATSUSHI; YAGUCHI AKIHIRO; MIURA HIDEO  
PA HITACHI LTD  
PI JP 2001210751 A 20010803 Heisei  
AI JP 2000-24691 (JP2000024691 Heisei) 20000128  
PRAI JP 2000-24691 20000128  
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2001  
AB PROBLEM TO BE SOLVED: To prevent a semiconductor element or a wafer from warping or the interface layer with a layer insulation film, etc., from peeling due to thermal stresses of a re-wired layer in a semiconductor device of a small size nearly the size of the semiconductor element.  
SOLUTION: The re-wired layer uses as a main **material** a **Cu composite** alloy containing **Cu<sub>2</sub>O** having smaller linear expansion coefficient and a smaller modulus of elasticity than those of **Cu** simple substance at a ratio of 80 vol.% or less, thereby lowering the thermal stress of the re-wired layer. Thus, a semiconductor device can be realized wherein a semiconductor element or wafer hardly warps and peeling between layers hardly occurs.  
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L38 ANSWER 23 OF 26 JAPIO COPYRIGHT 2003 JPO  
AN 2001-185443 JAPIO  
TI THIN-FILM CAPACITOR  
IN IWANAGA TOMOHISA  
PA HITACHI LTD  
PI JP 2001185443 A 20010706 Heisei  
AI JP 1999-363880 (JP11363880 Heisei) 19991222  
PRAI JP 1999-363880 19991222  
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2001  
AB PROBLEM TO BE SOLVED: To provide a thin-film capacitor wherein **copper** and its oxide that are inexpensive and have high conductivity are used for electrode material and stress in the manufacturing process is relaxed.  
SOLUTION: In a thin-film capacitor wherein an electrode 11, a dielectric layer 21 and an electrode 12 are laminated on a substrate 1, a **composite material of copper** and **cuprous oxide** is used for the electrodes 11 and 12. As a result, the stresses generated in the manufacturing process between the substrate 1 and the electrode 11 and between the electrodes 11 and 12 and the dielectric layer 21 are relaxed and the generation of cracks and peelings and the like can be reduced.  
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L38 ANSWER 24 OF 26 JAPIO COPYRIGHT 2003 JPO  
AN 2001-174428 JAPIO  
TI HYDROGEN GAS DETECTOR  
IN TANAKA KATSUYA  
PA HITACHI LTD  
PI JP 2001174428 A 20010629 Heisei  
AI JP 1999-363879 (JP11363879 Heisei) 19991222  
PRAI JP 1999-363879 19991222

02/14/2003

SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2001  
AB PROBLEM TO BE SOLVED: To provide an inexpensive hydrogen gas detector.  
SOLUTION: A hydrogen gas sensor 103 having a **Cu-Cu<sub>2</sub>O**  
**composite material** is arranged in the upper bottom part  
of the ceiling 104 having a downward recessed shape of a hydrogen using  
equipment and hydrogen gas is detected on the basis of a change in the  
conductivity of the **Cu-Cu<sub>2</sub>O composite**  
**material** generated when the **Cu-Cu<sub>2</sub>O**  
**composite material** is reduced by hydrogen. Since the  
**Cu-Cu<sub>2</sub>O composite material** being a low cost  
material is used in the hydrogen gas sensor, an inexpensive hydrogen gas  
detector can be realized.  
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L38 ANSWER 25 OF 26 JAPIO COPYRIGHT 2003 JPO  
AN 1989-313328 JAPIO  
TI PRODUCTION OF OXIDE SUPERCONDUCTING MATERIAL  
IN INOUE OSAMU; ADACHI SEIJI; KAWASHIMA SHUNICHIRO; TAKAHASHI YUKIHIRO;  
HIRANO HIROFUMI  
PA MATSUSHITA ELECTRIC IND CO LTD  
PI JP 01313328 A 19891218 Heisei  
AI JP 1988-142132 (JP63142132 Showa) 19880609  
PRAI JP 1988-142132 19880609  
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1989  
AB PURPOSE: To obtain a superconducting material having a high  
superconduction transition temp. by heating a powdery **mixture** of  
starting **materials** such as bismuth oxide, strontium oxide,  
calcium oxide and **copper** oxide at a prescribed temp.  
CONSTITUTION: Bismuth oxide or bismuth hydroxide, strontium oxide or  
strontium hydroxide, calcium oxide or calcium hydroxide and **copper**  
oxide, **cuprous oxide** or **copper** hydroxide are  
used as starting **materials**. A **mixture** of powders of  
the starting materials is heated at 770-800&deg;C to obtain a  
superconducting material having a high superconduction transition temp.  
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L38 ANSWER 26 OF 26 JAPIO COPYRIGHT 2003 JPO  
AN 1989-313325 JAPIO  
TI PRODUCTION OF OXIDE SUPERCONDUCTING MATERIAL  
IN INOUE OSAMU; ADACHI SEIJI; KAWASHIMA SHUNICHIRO; TAKAHASHI YUKIHIRO;  
HIRANO HIROFUMI  
PA MATSUSHITA ELECTRIC IND CO LTD  
PI JP 01313325 A 19891218 Heisei  
AI JP 1988-142135 (JP63142135 Showa) 19880609  
PRAI JP 1988-142135 19880609  
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1989  
AB PURPOSE: To obtain a superconducting material having a high  
superconduction transition temp. by heating a powdery **mixture** of  
starting **materials** such as thallium oxide, barium oxide, calcium  
oxide and **copper** oxide at a prescribed temp.  
CONSTITUTION: Thallium oxide or thallium hydroxide, barium oxide or barium  
hydroxide, calcium oxide or calcium hydroxide and **copper** oxide,  
**cuprous oxide** or **copper** hydroxide are used as  
starting **materials**. A **mixture** of powders of the  
starting materials is heated at 850-940&deg;C to obtain a superconducting  
material having a high superconduction transition temp.  
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